# Teacher-Student Relationships: Examining Student Perceptions of Teacher Support and Positive Student Outcomes

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## Abstract

The purpose of this study was to determine the relationship between urban middle school students' perceptions of the support provided by their teachers, and student engagement, behavior, and academic success. A student self-report instrument that focused on the alterable aspects of the relationship between teachers and their adolescent students was administered to 102 middle school students and 15 teachers at an urban charter school in a large Midwestern city. The survey contained items measuring student perceptions of teacher support for competence, autonomy, and relatedness; teacher mastery goal orientation; teacher academic press; and self-reported engagement. Teacher-reported student engagement was also measured. Student outcome measures in the areas of academics and behavior were measured at the end of the school year, and student demographic variables were collected. Factor analysis revealed that two factors, Teacher Caring and Support and Teacher Press for Academic Thought were found to be the best fit for the student survey data. Both of these factors were significantly correlated with student- and teacher-ratings of student engagement. Teacher Press for Academic Thought was found to be a significant predictor of students' assignment to enrichment detention as well as students' reading test scores. Teacher-Rated Engagement was found to mediate the effect of Teacher Caring and Support on Enrichment Detention, the effect of Teacher Press for Academic Thought on Enrichment Detention, and the effect of Teacher Press for Academic Thought on reading test scores. Student-rated engagement was not found to mediate the effect of the independent variables on any of the student outcome variables. Limitations and implications for research and practice are discussed.

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# Chapter 1

## Introduction

While working as a school counselor in an urban junior high school, before returning to graduate school to pursue my doctorate in school psychology, I often served as a sounding board for the frustrations and concerns of both teachers and students. In what I imagine to be an experience that is familiar to many people who have worked in schools, there were certain teachers who complained about particular students' lack of motivation, lack of preparedness for class, and poor behavior. Meanwhile, these same students complained to me about how boring their classes were and how their teachers did not like them, or did not help them with their work. I began to notice a trend. There seemed to be a feedback loop in which teachers began to develop low expectations for certain students based on their experiences with them, and these students began to further disengage from school in reaction to their negative perceptions of their relationships with their teachers. From my perspective, the teacher-student relationship seemed to be an alterable variable that teachers could improve when working with struggling students. However, many teachers did not see the link between their teaching behaviors and the behavior and engagement of the students in their classrooms. From this experience, I became interested in the connection between student perceptions of their relationships with teachers and their subsequent engagement in school. Could positive teacher-student relationships facilitate student engagement and lead to more positive outcomes for students? What elements of the teacher-student relationship were most likely to support students' academic and behavioral success at school?

Teacher-student relationships can be formed through teachers' interactions with individual students, but more broadly, they can also be created by the structure of the classroom environment that the teacher creates. Teacher-student relationships provide the context through which students experience both the classroom and the school, and have the potential to positively impact student engagement as well as academic, behavioral, and social/emotional student outcomes. Research in the area of student motivation and engagement has hypothesized that when students' needs for competence, autonomy, and relatedness are met, they experience engagement (Connell & Wellborn 1991; Klem & Connell, 2004; Skinner & Belmont, 1993), which in turn leads to positive outcomes for students, such as prosocial behavior (Decker et al., 2007; Wentzel, 1997) and achievement (Connell & Wellborn 1991; Furrer & Skinner, 2003; Malecki & Demaray, 2006; Murray & Malmgren, 2005; Roorda et. al, 2011).

Student engagement, described by Skinner, Kindermann, and Furrer as "the quality of a student's connection or involvement with the endeavor of schooling" (2009), is thought to serve as the mediator between the context of the teacher-student relationship and outcomes of interest for students (Furrer & Skinner, 2003; Roorda et al., 2011). However, providing support for the student needs of competence, autonomy, and relatedness, as originally defined by Connell and Wellborn (1991), may not be the only type of support that teachers can provide through the teacher-student relationship and the context created in the classroom. Researchers have described different forms of teacher support, including support for mastery goal orientation (Ames, 1992; Meece, Anderman, & Anderman, 2006), perceived caring (Wentzel, 1997), social support (Lee & Smith,

1999; Malecki & Demaray, 2003), academic press (Lee & Smith, 1999; Phillips, 1997; Shouse, 1996), and warmth and demandingness (Gregory & Weinstein, 2008). When all of these elements are viewed as a whole, it becomes clear that the teacher-student relationship includes more than just affective aspects. The teacher-student relationship also includes the academic support that teachers provide their students, including academic press and support for students' autonomy and mastery goals.

Since researchers have used different terms to describe the teacher-student relationship, and measured different aspects of the relationship, it is not clear which aspects of teacher support are the most essential in order to facilitate student engagement and positive outcomes for students. Some research studies have found teacher academic press to be more predictive of positive outcomes for students than affective aspects of the teacher-student relationship (Lee & Smith, 1999; Shouse, 1996), while others have focused more on the positive effects of social support and perceived caring (Malecki & Demaray, 2006; Wentzel, 1997). In order to identify aspects of the teacher-student relationship that may be amenable to intervention, a measure of student perceptions of the alterable aspects of the relationship between teachers and their adolescent students, including teacher support for the needs of competence, autonomy, and relatedness, as well as teacher support for academic press and mastery goal orientation is warranted. Specifically, there is a need for more research that examines adolescent student perceptions of their relationships with their teachers and the support provided by their teachers, and how these perceptions are related to positive student outcomes.

# Chapter 2

## Literature Review

### Theories that Inform Understanding of Teacher-Student Relationships

The literature regarding teacher-student relationships is dominated by two main theories: attachment theory and motivation theory. Developmental psychologists have emphasized the importance of infant attachment to caregivers; providing a foundation from which infants are able to explore their environment (Ainsworth & Bowlby, 1991; Bowlby, 1969; Pianta, 1999). By extending this attachment perspective to teacher-student relationships, it can be argued that students' perception of teacher nurturing and caring can provide a solid foundation for students' academic and social growth (Birch & Ladd, 1997; Davis, 2003; Pianta, 1999; Roorda, Koomen, Spilt, & Oort, 2011). Teacher-student relationships can also be viewed from a motivational perspective, in which students benefit not only from their perception of teacher caring, but also from the structure that is provided by the classroom environment, and the support that teachers provide for students' needs (Connell & Wellborn, 1991; Davis, 2003).

**Attachment.** Researchers in the field of developmental psychology often view the teacher-student relationship through the lens of attachment theory. From an attachment theory perspective, interactions with primary caregivers provide the context within which infants and young children learn patterns of adaptation that help them regulate their emotions and navigate novel situations (Ainsworth & Bowlby, 1991; Pianta, 1999). It has been suggested that children transfer patterns of adaptation to

interactions with new adults and new situations, while also potentially learning new patterns of adaptation from these new situations (Pianta, 1999). In this way, it is conceivable that since young children interact with their teachers much like a child would interact with a parent, they could rely on the teacher to help them learn how to navigate the environment of the classroom. In the classroom, it has been suggested that teachers can serve in the role of an attachment figure for young children and provide a secure base from which children can explore the world of school (Zionts, 2005). Children's early attachment experiences with their teachers can shape their beliefs about school, and provide a foundation for their future interactions with teachers and school adjustment (Hamre & Pianta, 2001).

Researchers who view the teacher-student relationship from an attachment perspective examine the interactions between teachers and students using the same dimensions that are used to explain the attachment relationship between children and parents: closeness, conflict, and dependency (Pianta, 1999). Closeness in the teacher-student relationship describes the level of warmth and open communication present in the relationship, conflict describes friction in the teacher-student relationship, and dependency describes the degree to which the child is overly dependent on the teacher (Birch & Ladd, 1997; Birch & Ladd, 1998; Pianta, 1999). A relationship is defined as "secure" if there is a high level of closeness, a low level of conflict, and a low level of dependency (Birch & Ladd, 1997; Birch & Ladd, 1998; Davis, 2003; Lynch & Cicchetti, 1997).

Using the attachment perspective seems most appropriate for young children who are beginning school, since they will be looking to their teachers to help them navigate the new environment of the classroom. Accordingly, much of the research in this area has used kindergarten and early elementary school-age student samples (e.g., Birch & Ladd, 1997; Birch & Ladd, 1998; Pianta, 1994). The dimensions of closeness, conflict, and dependency may not be sufficient to describe the relationship between teachers and students as students move past elementary school, and become less dependent on their teachers and more interested in the opinions of their peers (Davis, 2003; Lynch & Cicchetti, 1997). Although adolescents may be less likely to have the types of attachment bonds with their teachers that younger children have, the teacher-student relationship continues to be an important source of support throughout students' educational careers (Hamre & Pianta, 2006), and may actually have more of an effect on positive outcomes of interest as students get older (Roorda et al., 2011). In addition, the attachment perspective focuses mainly on the social and affective aspects of the teacher-student-relationship, and not on the academic support that teachers can provide to their students.

**Motivation.** While attachment theory grew out of attempts to explain the development of healthy adaptation in infants and young children, motivation theory originated from explanations of goal directed behavior. Motivation was initially discussed in relation to the fulfillment of psychological and biological drives (Deci & Ryan, 2000; Meece, Anderman, & Anderman, 2006; Urdan & Schoenfelder, 2006). Modern research and theories describe motivation as resulting from individuals' interactions within different environmental contexts (Connell & Wellborn, 1991; Deci &

Ryan, 2000; Urdan & Schoenfelder, 2006), rather than originating solely from within the individual. From this perspective, motivation is situational and can be supported or thwarted by environmental structures. Within the field of education, motivational research is mainly focused on how teacher behaviors create contexts that are able to influence student motivation and learning. Motivation theory views the teacher-student relationship as more than just caring and emotional support, but also as the structure and support for learning that teachers can provide (Davis, 2003).

***Achievement goal theory.*** Achievement goal theory is one way of explaining student motivation to learn. This theory uses the concept of goal attainment to understand motivation and describes two different types of goals regarding learning: mastery and performance goals (Urdan & Schoenfelder, 2006). Mastery goals are related to desire to learn and master material and focus on developing competence and skills, while performance goals are related to demonstrating knowledge to others and comparing oneself positively to others. School and classroom environments can send subtle or overt messages to students about the value of mastery versus performance goals and thereby create goal structures that make one type of achievement goal more attractive to students (Ames, 1992; Urdan & Schoenfelder, 2006). Mastery achievement goals have been more closely linked to student motivation to learn, and researchers have suggested that teachers can support student motivation to learn by creating mastery goal structures in their classrooms (Ames, 1992; Meece, Anderman, & Anderman, 2006; Urdan & Schoenfelder, 2006). Teachers can encourage students in their classrooms to adopt mastery goals by providing challenging and meaningful work, having high expectations, focusing on

learning and improvement rather than grades, giving students choices, and supporting student self-regulation (Ames, 1992; Urdan & Schoenfelder, 2006). Although the classroom structure that a teacher creates may not typically be considered part of the teacher-student relationship, student perceptions of teacher-created goal structures are a vital element of the interaction between teachers and students and have been shown to have an effect on student motivation and academic success (Meece et al., 2006).

***Self-determination theory and self-system processes.*** Other major motivational theories that inform researchers' understanding of teacher-student relationships include self-determination theory and self-system processes theory. The theories of self-determination and self-system processes both use a motivational perspective to describe the role of the environmental context in meeting people's innate needs. Both theories propose that people have three innate psychological needs that must be addressed if they are to become self-regulated, intrinsically motivated, and mentally healthy: the need for competence, the need for autonomy, and the need for relatedness (Connell & Wellborn, 1991; Deci & Ryan, 2000; Ryan & Deci, 2000; Urdan & Schoenfelder, 2006). The need for competence refers to an individual's beliefs about their skills and abilities. In the school setting, competence involves students' knowledge about how to do well in school and their beliefs that they can successfully execute those strategies (Connell & Wellborn, 1991, p.53). The need for autonomy involves the ability to have control over actions and decisions, the opportunity to participate in activities that are of interest, and the connection between actions and goals. The need for relatedness involves feelings of security, connectedness, and belonging. (Connell & Wellborn, 1991; Urdan &

Schoenfelder, 2006). In self-determination theory, the three innate needs must be met in order for individuals to develop intrinsic motivation, whereas in self-system processes, the meeting of the three needs leads to engagement. It can be seen that there may be a great deal of overlap in the conceptualization of motivation and engagement, and sometimes the terms are used interchangeably. It has been suggested that engagement can be thought of as actions that represent the outward manifestation of motivation, and that engagement can be facilitated by contextual factors in the environment (Christenson, Reschly, & Wylie, 2012; Skinner, Furrer, Marchand, & Kindermann, 2008; Skinner & Pitzer, 2012).

When viewed from an educational perspective, these motivational theories can be used to describe how teachers may be able to interact with students and structure the classroom environment in a way that supports students' needs. In other words, the teacher-student relationship provides the context that can support students' innate needs (Connell & Wellborn, 1991; Klem & Connell, 2004). The literature in this area suggests that teachers support the need for competence by providing structure, the need for autonomy by providing autonomy support, and the need for relatedness by providing involvement (Connell & Wellborn, 1991; Klem & Connell, 2004; Skinner & Belmont, 1993). Teachers can provide structure by providing clear expectations, consistent consequences, optimally challenging tasks, and supportive feedback. Autonomy support involves the provision of choices, support for self-regulation, and helping students connect their actions to their personal goals. Involvement supports students' relatedness

by providing emotional availability, time, and interest in students, as well as a sense of caring (Connell & Wellborn, 1991).

The transition from elementary school to middle school has been hypothesized to negatively impact student motivation and achievement due to decreased support for students' needs (Davis, 2006; Eccles et al., 1993). Students in middle school have reported significantly lower levels of relatedness to teachers and engagement in class (Furrer & Skinner, 2003). "During the transition, students begin to report feeling less competent and autonomous and less supported by the classroom context, and they are more likely to endorse less adaptive learning goals. Moreover, changes across the two school environments are also reflected in students' reports of feeling greater anonymity with their middle school teachers and other students in their classes" (Davis, 2006, p. 194). When compared to elementary schools, middle school classrooms have been found to have a greater emphasis on controlling students, a more competitive environment, fewer opportunities for decision-making, and less opportunity for personal teacher-student relationships (Eccles et al., 1993; Hamre & Pianta, 2006). Because of the environmental changes associated with the transition from elementary to middle school, teacher support for competence, autonomy, and relatedness becomes especially critical (Urdan & Schoenfelder, 2006).

**Elements of Teacher-Student Relationships and Teacher Support**

Teacher-student relationships have been conceptualized in different ways by different theorists, and have been alternately described as "student-teacher relationships", "child-teacher relationships", and "teacher-child relationships". The term "teacher-

student relationships" is the description of choice for this study because its placement of the word "teacher" first implies that the teacher is primarily responsible for setting the tone of the relationship, and its use of the word "student" places emphasis on the child as a learner. For the purposes of this literature review, the term "teacher-student relationships" will be used not only to describe the dynamic interactions of the relationship itself, but also the elements that teachers are able to bring to the relationship which can be thought of as alterable variables, including the classroom context that they create for their students.

A review of the literature in the area of teacher-student relationships found a number of elements that can be considered important aspects of teachers' relationships with their students. While some definitions of the key elements of teacher-student relationships focus mainly on the affective aspects of the relationship, others focus on aspects of the classroom context. Researchers in this area have come to different conclusions about the role of teacher-student relationships based on the definitions used.

**Support for mastery goal orientation.** Teachers can support students' motivation to learn by supporting mastery and understanding of content in their classrooms (Ames, 1992; Meece et al., 2006). If teachers support students' mastery goal orientations, students in their classrooms will perceive that the academic work they do has a purpose and is challenging and meaningful, that they have choices and decision-making power in the classroom, and that they are working on achieving competence and mastery of the material, not just working to earn a grade (Ames, 1992; Midgley et al.,

2000; Urdan & Schoenfelder, 2006). In classrooms that support student mastery, there is also a focus on effort and growth rather than performance.

**Support for student needs of competence, autonomy, and relatedness.** Teachers provide the social context variables of structure, autonomy support, and involvement that are thought to support students' needs for competence, autonomy, and relatedness (Connell & Wellborn, 1991). In the classroom, teachers provide structure by communicating clear expectations, consistent consequences, and optimal challenge. Teachers provide autonomy support by helping their students to connect their actions in the classroom to their own personal goals and values, focusing on effort and learning rather than grades, and providing opportunities for appropriate choices. Involvement supports students' needs for relatedness by providing positive affect and caring for students as well as psychological resources, such as time and interest (Connell & Wellborn, 1991, p.56). "Teachers can help students meet their needs and become intrinsically motivated to learn when they provide meaningful and challenging work, allow students to take ownership over their work, and provide a caring and supportive structure for learning" (Urdan & Schoenfelder, 2006, p. 338).

**Perceived caring.** Associated with the need for relatedness is the importance of caring in the teacher-student relationship. From a motivational perspective, caring and emotional support from teachers are necessary, but not sufficient for the development of motivation to learn (Deci & Ryan, 2000). From an attachment perspective, student perceptions of caring relationships with teachers are necessary in order to build the foundation of a secure relationship (Pianta, 1994; Furrer & Skinner, 2003; Wentzel,

1997). When middle school students themselves were asked about what makes a caring teacher, their responses could be categorized into two broad areas: teacher behaviors related to content and pedagogy (e.g., helping with work, encouraging, and maintaining an orderly classroom atmosphere), and teacher behaviors that fostered relationships between the teacher and student (e.g., being interested in the students on a personal level, respecting students, and being a good listener; Ferreira & Bosworth, 2001).

**Social Support.** Some studies refer to the support provided by teachers and the school environment as social support (Lee & Smith, 1999, Malecki & Demaray, 2003). Malecki and Demaray defined social support as "an individual's perceptions of general support or specific supportive behaviors (available or acted on) from people in their social network, which enhances their functioning or may buffer them from adverse outcomes" (2003, p. 232). Within the school setting, the concept of social support focuses on the positive caring relationships that students may have with adults that can help them within the school community (Lee & Smith, 1999), and can include emotional support (trust and love), instrumental support (time, materials, resources), informational support (information and advice) or appraisal support (evaluative feedback; Malecki & Demaray, 2003).

**Academic Press.** Many studies have examined academic press in isolation from the caring and affective elements of the teacher-student relationship (Lee & Smith, 1999; Phillips, 1997; Shouse, 1996). This research has shown that academic press is a key element of teacher support that can lead to positive student outcomes, and has been found to be more powerful than having a caring school community in some cases (Phillips,

1997; Shouse, 1996). Academic press includes high expectations and academic standards (Lee & Smith, 1999), teacher press for understanding (Midgley et al., 2000), and a school climate that includes achievement oriented values, goals, and norms (Shouse, 1996).

**Warmth and demandingness.** Another method of conceptualizing teacher-student relationships can be found in recent research on authoritative teaching, which expands the research on authoritative parenting (Baumrind, 1971; 1996) to the classroom (Dever & Karabenick, 2011; Gregory & Weinstein, 2008; Walker, 2008; Wentzel, 2002). Similar to the literature on authoritative parenting, two dimensions of authoritative teaching are described: responsiveness (also known as warmth) and demandingness (Gregory & Weinstein, 2008; Walker, 2008). Responsiveness (or warmth) includes warmth and care, provision of resources, and adaptation to individual needs, while demandingness involves firm behavioral control, autonomy support, and expectations (Walker, 2008, p. 219). In many ways, this concept can be thought of as distilling all of the previously mentioned elements into one theory that balances caring, high expectations, and autonomy support.

**Summary of teacher support elements.** When all of these elements are viewed as a whole, themes begin to emerge pointing to the fact that the teacher-student relationship includes more than just affective aspects. The teacher-student relationship also includes the academic support that teachers provide, including academic press and support for students' autonomy and mastery goals. Teachers can create warm, welcoming, and supportive environments in their classrooms, but they can also provide

high expectations, optimally challenging tasks, and opportunities for students to learn and master academic material.

**Research on Teacher-Student Relationships and Student Outcomes**

Literature in the area of teacher-student relationships suggests that a caring and supportive classroom environment can facilitate student engagement (Connell & Wellborn, 1991), and contribute to the development of academic, behavioral, and social/emotional skills (e.g., Birch & Ladd, 1997; Davis, 2003; Decker, Dona, & Christenson, 2007; Walker, 2008; Wentzel, 1997; Wentzel, 2002). A meta-analysis that examined the affective aspects of teacher-student relationships found that the effect sizes for the associations between positive teacher-student relationships and engagement were medium to large ($r = .39$, $p < .01$ for fixed effects, and $r = .34$, $p < .01$ for random effects), while the effect sizes for the associations between positive teacher-student relationships and achievement were smaller, but still significant ($r = .16$, $p < .01$ for both fixed and random effects; Roorda et. al, 2011). In addition, teachers' academic expectations, and students' perceptions of those expectations have been shown to have an effect on student academic achievement and behavior at school (Gregory & Weinstein, 2008; Shouse, 1996).

**Demographic variables and relationships.** Research has found significant interactions between student characteristics such as ethnicity, gender, and disability, and the quality of teacher-student relationships. Specifically, research has found more negative teacher perceptions of relationships with African American students (Murray & Murray, 2004), especially for students with a history of behavioral issues (Decker et al.,

1997). Teachers have consistently rated their relationships with boys as having greater conflict and lower levels of closeness than their relationships with girls (Baker, 2006; Birch & Ladd, 1997; Birch & Ladd, 1998; Hamre & Pianta, 2001; Murray & Murray, 2004). One study also found that teachers perceived their relationships with students with disabilities to have more conflict and less closeness than their relationships with students without disabilities (Murray & Murray, 2004). Another study suggested that students may benefit differently from their perceptions of teacher caring and academic press depending on their gender and ethnicity (Dever & Karabenick, 2011).

A meta-analysis examining the affective aspects of teacher-student relationships found student characteristics to moderate the associations between teacher-student relationships and measures of engagement and achievement (Roorda et. al, 2011). Effect sizes between positive teacher-student relationships and engagement ($\beta = .17$, $p < .001$) and achievement ($\beta = .08$, $p < .05$) were found to be larger for secondary school students than primary school students, while associations between negative relationships and engagement ($\beta = .22$, $p < .05$) and achievement ($\beta = .39$, $p < .001$) were greater for primary school students. Effect sizes between positive relationships and engagement were found to be greater in samples with more boys ($\beta = -1.75$, $p < .001$), while effect sizes between positive relationships and achievement were found to be greater in samples with more girls ($\beta = .10$, $p < .01$). Finally, effect sizes between positive relationships and achievement were found to be larger in samples with greater ethnic diversity ($\beta = -.13$, $p < .01$), as well as in samples with lower SES ($\beta = -.13$, $p < .001$), and effect sizes between negative relationships and engagement ($\beta = -.62$, $p < .05$) and achievement ($\beta = -.67$, $p <$

.05) were greater in samples with more students with learning difficulties (Roorda et. al, 2011).

Although these student characteristics are unalterable, understanding the correlations that have been found between these characteristics and teacher-student relationships is important for establishing a foundation for future research by highlighting potential teacher biases that may impact relationships with students, as well as student characteristics that may have differential effects on student outcomes of interest. Research on the student outcomes associated with teacher-student relationships must take into account these student characteristics, and statistically control for them when analyzing results.

**Student engagement.** The definition of student engagement in the literature is varied, but most researchers agree that student engagement is a multi-faceted concept that includes behavioral, cognitive, and affective elements (Christenson, Reschly, Appleton, Berman-Young, Spanjers, & Varro, 2008; Christenson et al., 2012; Fredricks, Blumenfeld, Paris, 2004; Furlong, Whipple, St. Jean, Simental, Soliz, & Punthuna, 2003; Skinner & Pitzer, 2012). Skinner and Pitzer (2012) conceptualize student engagement as being comprised of behavioral, emotional, and cognitive engagement. In this model, behavioral engagement includes effort and perseverance, emotional engagement includes enthusiasm and enjoyment, and cognitive engagement includes attention, focus, and participation.

According to self-system processes theory, when students' innate needs of competence, autonomy, and relatedness are met, they experience engagement. "When

psychological needs are being met within particular cultural enterprises such as family, school, or work, engagement will occur and be manifested in affect, behavior, and cognition" (Connell & Wellborn, 1991, p. 52). This perspective on the link between students' needs and engagement is similar to that of the National Research Council and Institute of Medicine (NRC). The NRC reconceptualized the needs for competence, autonomy, and relatedness as psychological variables that shape the effect of the educational context on student engagement (NRC, 2004). The NRC used slightly different terminology than that used by motivation theorists. The need for competence is described as beliefs about competence and control ("I can"), the need for autonomy as values and goals ("I want to"), and the need for relatedness as social connectedness ("I belong"). When environmental contexts support student beliefs that "I can", "I want to", and "I belong", student engagement is proposed to be a result (NRC, 2004).

Student engagement is thought to serve as the mediator between the context of the teacher-student relationship and outcomes of interest for students, such as skills, abilities, positive feelings about school, and achievement (Connell & Wellborn, 1991; Fredricks, Blumenfeld, & Paris, 2004; Furrer & Skinner, 2003; Hughes, Luo, Kwok, & Loyd, 2008). The literature would suggest that teacher-student relationships have the potential to contribute to student engagement and the positive outcomes for students that follow.

***Research on teacher-student relationships and student engagement.***

Engagement has been studied as both a mediator between environmental contexts and student outcomes of interest, such as achievement, and as an outcome of interest itself. In this way, student engagement has been viewed as one way to explain the relationship

between the context of the teacher-student relationship and student outcomes. Connell and Wellborn (1991) reported a direct relation between teacher reports of student engagement in school and important school outcomes such as academic achievement and grades (p.59). When measured from an attachment perspective, teachers' ratings of their relationships with students significantly predicted both student- and teacher-reported engagement (14% of the explained variance in student-reported engagement, and 18% of the explained variance in teacher-rated engagement; Decker et al., 2007). Research based on motivation theory has found that when teacher-student relationships were measured from elementary students' perspectives, students who reported high levels of teacher support were 89% more likely than average students to feel optimally engaged, and students who perceived low teacher support were 109% more likely to feel disengaged as average students (Klem & Connell, 2004). Differences in teacher-rated engagement were not as dramatic, but indicated that students who reported high levels of teacher support were 41% more likely than average students to be rated as optimally engaged by their teachers, and students who reported low levels of teacher support were 40% more likely to be rated as disengaged by their teachers (Klem & Connell, 2004). When elementary students were asked about their feelings of relatedness to different social partners (teachers, parents, and peers), it was found that students' ratings of their relatedness to teachers uniquely predicted both student- and teacher-rated behavioral and emotional engagement ($\beta$ values ranging from .14 to .40, $p < .01$; Furrer & Skinner, 2003). It was also found that student perceptions of teacher support for competence (structure) uniquely predicted behavioral engagement ($\beta = .33$, $p < .001$), while student perceptions

of teacher support for relatedness (involvement) uniquely predicted emotional engagement ($\beta = .20$, $p < .001$; Skinner & Belmont, 1993). Interestingly, teachers' perceptions of student engagement may also influence their behavior, showing a reciprocal relationship between student engagement and teacher-student relationships (Skinner & Belmont, 1993). When both teachers and students were asked to rate student behavioral and emotional engagement and disaffection using the same set of items, correlations were found in the expected direction between student engagement (and disaffection) and a number of potential facilitators of engagement (Skinner et al., 2009). Student and teacher ratings of behavioral and emotional engagement were found to be moderately correlated ($r = .34$, $p < .01$ in the Fall; $r = .38$, $p < .01$ in the Spring). Of particular interest is the fact that students' ratings of their sense of relatedness to their teacher and their teachers' provision of warmth, structure, and autonomy support were all found to be moderately to strongly correlated with student-rated engagement ($r$ values ranging from .40 to .60, $p < .01$), and moderately correlated with teacher-rated engagement ($r$ values ranging from .20 to .34, $p < .01$). Student-rated engagement was found to have higher correlations with potential facilitators of engagement than teacher-rated engagement, which could be due to the fact that in this study the potential facilitators were also measured using student report measures (Skinner et al., 2009).

Finally, student engagement has been found to mediate the relationship between elements of the teacher-student relationship and academic performance. More specifically, teacher-reports of student engagement mediated the relationship between students' reports of relatedness to teachers, parents, and peers, and their grades in reading

and math, as did students' self-reported engagement (Furrer & Skinner, 2003). In a study in which teachers used a reading curriculum that was designed to be more motivating to students, students' level of reading engagement, as rated by their teachers, was found to be correlated with measures of their reading comprehension (*r* values between .55 and .57, $p < .05$), and was also found to mediate the relationship between teacher instruction and students' reading comprehension (Wigfield et al., 2008). When teachers' perceptions of their relationship with students and student engagement were measured annually for three years along with student math and reading achievement, it was found that the effect of the teacher-student relationship on reading and math achievement was mediated by teacher reports of student engagement (Hughes et al., 2008).

**Academic outcomes.** Research in the area of academic student outcomes has measured student achievement using a number of different indicators. Achievement has been measured using observable and measurable concrete indicators, such as grades and test scores, but it has also been measured in the form of work habits, effort, interest in school, and school satisfaction, using the more subjective methods of teacher-report and student self-report.

Research has found correlations between teacher-student relationships and the observable outcomes of students' grades and test scores. When upper elementary and middle school teachers' perceptions of the teacher-student relationships were measured from an attachment perspective, the teacher-student relationship was found to account for a significant portion (23%) of the variance in student achievement ($F[3, 262] = 26.57$, $p < .01$; Ang, 2005). Another study found that elementary teachers' perceptions of closeness

in the teacher-student relationship was moderately related to reading grades ($r = .28$, $p < .001$), but was not significantly related to standardized test scores, while teachers' perceptions of conflict in the teacher-student relationship was negatively related to both grades ($r = -.36$, $p < .001$) and test scores ($r = -.21$, $p < .001$; Baker, 2006). Teacher ratings of closeness and dependency have also been found to account for a small but significant portion of the variance in kindergarten students' visual (14%) and language (9%) school-readiness skills ($p < .001$; Birch & Ladd, 1997). Middle school students' ratings of their sense of psychological membership in school taken in the fall were found to be moderately correlated with student GPAs at the end of the school year ($r = .33$, $p < .001$; Goodenow, 1993). In another study, middle school students' ratings of their perceptions of social support from their teachers was found to be moderately positively correlated with their total GPA, but only for students receiving free and reduced-price lunch ($r = .37$, $p < .001$; Malecki & Demaray, 2006).

When examined through the lens of warmth and demandingness, fifth grade students were found to have smaller gains in their standardized math test scores ($F[2, 42] = 3.77$, $p < .05$, partial $\eta^2 = .16$) in a classroom in which the teacher was rated as demonstrating low levels of autonomy support and responsiveness than in classrooms with higher levels of autonomy support and responsiveness (Walker, 2008). Another study found that teacher modeling of motivation towards schoolwork and high expectations were significant positive predictors of sixth-grade students' grades ($\beta = .12$, $p < .05$; $\beta = .23$, $p < .001$), while negative feedback from teachers was a significant negative predictor of students' grades ($\beta = -.21$, $p < .001$; Wentzel, 2002). Academic

press alone was found to have a small but significant effect on student achievement ($\beta$ = .04, $p < .05$) in a study that examined a number of independent variables, including sense of community (Shouse, 1996). In addition, a separate method of data analysis found that in schools serving students from families with low income, the strongest effects on achievement were actually found when there were high levels of both academic press and sense of community (Shouse, 1996). Lee and Smith (1999) found that students' social support from their teacher, parents, peers, and the community had a small, but significant positive effect on students' academic achievement, but that this effect was significantly influenced by the academic press of the school they attended. They concluded that without high levels of academic press at the school-level, students would not benefit from the potentially positive effects of social support on achievement (Lee & Smith, 1999).

In one of the few quasi-experimental studies in this area of research, teachers attempted to improve their relationships with a group of African American students who had a history of emotional or behavior problems at an urban high school (Murray & Malmgren, 2005). After five months of an intervention in which select teachers met weekly with a handful of students in an attempt to improve students' feelings of involvement, communication, and warmth from teachers, student GPA was found to be significantly improved compared to that of the control group ($F[1, 47] = 4.36$, $p < .05$, partial $\eta^2 = .09$), and was the only measure of school adjustment that was found to be significantly effected by the intervention (Murray & Malmgren, 2005).

**Behavioral and social/emotional outcomes.** Positive teacher-student relationships have been found to be related to student behaviors that are prosocial and

healthy, while negative teacher relationships or lack of positive relationships have been found to be correlated with behavior problems and unhealthy behaviors.

In a sample of kindergarten students, teacher-rated antisocial behavior was strongly positively correlated with teacher-reported conflict in the relationship ($r = .70$, $p < .001$), and moderately negatively correlated with teacher-reported closeness ($r = -.44$, $p < .001$), while teacher-rated prosocial behavior was strongly negatively correlated with teacher-reported conflict ($r = -.56$, $p < .001$), and strongly positively correlated with teacher-reported closeness ($r = .65$, $p < .001$; Birch & Ladd, 1998). The effect of teacher-student relationships on student behavior is evidenced in a longitudinal study in which teacher reports of negative relationships with students in kindergarten were found to account for a significant proportion of the variance in the number of disciplinary reports received in upper elementary school, with a stronger relationship found for students who had the most behavior problems in kindergarten (Hamre & Pianta, 2001). Accordingly, after controlling for gender and grade, elementary teacher ratings of the teacher-student relationship accounted for a significant portion of the variance in both behavior referrals (11% of the explained variance) and suspensions (23% of the explained variance), while student reports of the teacher-student relationship accounted for a significant portion of the variance only in behavior referrals (18% of the explained variance; Decker et al., 2007). At the middle school level, students' psychological sense of school membership was found to account for a small but significant amount of the variance in student absences (3%) and tardiness (2%; Goodenow, 1993). At the high school level, students who had been referred for in-school suspensions due to defiance rated their own behavior

as significantly more defiant and less cooperative in the referring teacher's classroom than in their favorite teacher's classrooms, and were marked absent significantly more class periods in the referring teacher's classroom (Gregory & Weinstein, 2008). These students also perceived the referring teachers as significantly less caring and holding lower academic expectations than their favorite teachers. In addition, teachers who were perceived to demonstrate more caring behaviors and higher academic expectations were also viewed by students as being more trustworthy (Gregory & Weinstein, 2008). This research suggests that through their relationships with students, teachers have the potential to influence their students' demonstration of positive behaviors at school.

***Social and emotional outcomes.*** Lastly, research has found correlations between teacher-student relationships and social/emotional outcomes that contribute to students' mental health and social skills. Students' perceptions of their relationships with teachers and bonds with school have been found to be related to their overall social and emotional adjustment (Murray & Greenberg, 2000). Middle school students' perception of teacher caring predicted a unique amount of the variance in their subsequent pursuit of prosocial and responsible goals at school, and their academic effort (change in $R^2$ between .07 and .09, $p < .01$; Wentzel, 1997). Elementary students with higher scores on measures on externalizing and internalizing behavior problems were also more likely to have higher levels of teacher-reported conflict ($\beta = .47$ and .34, respectively, $p < .001$; Murray & Murray, 2004), and teacher ratings of closeness and conflict in their relationships with students were found to be moderately to strongly correlated with teacher ratings of externalizing behaviors and internalizing behaviors ($r = -.60$ and -.33, respectively, $p <$

.001; Baker, 2006). It is important to note that many of these findings include correlations, which do not indicate directionality. Students who exhibit problem behaviors may elicit negative feelings from their teachers, while students who are well adjusted and attentive in school may be more likely to form positive relationships with their teachers.

**Measuring Teacher-Student Relationships: A Critique**

Although directionality is difficult to determine, it can be seen that whether the teacher-student relationship was measured using teacher-report or student-report, correlations were found between aspects of the teacher-student relationship and positive outcomes for students, including engagement, academic achievement, and positive behavior. This research highlights the importance of the teacher-student relationship, yet also reveals the disjointed nature of this research. Teacher-student relationships have been measured from an attachment perspective and a motivation perspective, as well as from other perspectives, including those that incorporate the concepts of perceived caring and teacher demandingness. Academic press has been measured as distinct from the affective aspects of the relationship. Some research has also measured the relationship between teachers and students as part of a related concept, such as “school belonging”, “psychological school membership”, and “school connectedness”. In addition, much of the research on teacher-student relationships has been correlational or explanatory, and has not focused on the alterable aspects of the relationship.

The definitions of the aspects of the teacher-student relationship measured have had a significant effect on the results found, and on the conclusions drawn by different

research studies. For example, Phillips (1997) defined academic press as teacher expectations for student high school and college completion, student reports of the amount of time they spent on homework, and the number of students taking higher-level math courses. When measured in this way, academic press was found to have a moderately strong negative correlation with student reports of teacher caring (Phillips, 1997). However, when academic press was defined as students' perceptions of their teachers' academic expectations and press for effort and understanding, academic press was found to be moderately and positively correlated with student perceptions of teacher caring (Gregory & Weinstein, 2008). In addition to closely examining definitions that have been used, it is important to consider the respondent, and the source of the data gathered. When both the teacher-student relationship and the outcome variables of interest are gathered using teacher report, there could be bias that leads to inflated estimates of the relationships between variables (Murray & Zvoch, 2011).

**Existing measures of teacher-student relationships.** Teacher-student relationships must be measured if we are to further understand what actions teachers can take to improve their relationships with struggling students and better meet the needs of those students, especially considering the potentially dramatic effect that these relationships may have on student engagement and achievement. In this way, a measure of teacher-student relationships can be conceptualized as way to link assessment to intervention. An assessment of teacher-student relationships should ideally yield results that can be used for intervention planning. Among all of the instruments that have been used to measure teacher-student relationships, some were designed specifically to

measure teacher-student relationships, while others were designed to measure related concepts such as school belonging, classroom climate, social support, or student engagement. Measures of teacher-student relationships have been designed using a variety of theoretical bases, and measure the relationship using a variety of methods, including teacher- and student-report. Research based on attachment theory has often measured the teacher-student relationship from the teacher's perspective, while research from the motivation perspective has often measured student perceptions of the teacher-student relationship.

Although research studies have used a number of methods to measure the teacher-student relationship, a preponderance of research has used a single assessment to measure the teacher-student relationship: The Student Teacher Relationship Scale (STRS; Pianta, 1994; Pianta, 1999; Pianta & Steinberg, 1992). In its current form, this measure is a teacher-report, 27-item instrument with three subscales: *Closeness*, *Conflict*, and *Dependency*. It has been used in a number of studies, and has substantial reliability and validity evidence (Pianta, 1999).

The three factors that are measured by the STRS, *Closeness*, *Conflict*, and *Dependency,* may not address the relationship needs of older students (Davis, 2003; Lynch & Cicchetti, 1997). In addition, the STRS only addresses the affective qualities of the relationship; since it does not measure alterable aspects of the teacher-student relationship it may not be a useful tool for planning interventions. Murray and Malmgren suggest that "finding ways to assess constructs such as teacher-student relationships

among adolescents reliably and effectively is critical, particularly for intervention efforts that are focused on impacting these relationships" (2005, p. 148).

A review of the literature reveals a number of other measures that have been used to assess the teacher-student relationship and related concepts, none of which are as widely used as the STRS, and only a handful of which assess the teacher-student relationship from the perspective of adolescent students (Goodenow, 1993; Institute for Research and Reform in Education, 1998; Malecki, Demaray, & Elliott, 2000; Midgley, et al., 2000; Murray & Zvoch, 2011). A number of studies also have used student-report measures that included sections or items from other surveys, and were not developed or studied specifically with the purpose of measuring the teacher-student relationship and support from teachers (e.g., Furrer & Skinner, 2003; Skinner et al., 2009). There have been other studies that examined teacher-student relationships using means other than survey instruments, such as interviews with students (Daniels & Aropostathis, 2005; Ferreira & Bosworth, 2001), and peer reports (Hughes et al., 2001). While qualitative data provide interesting anecdotal evidence in support of the importance of the teacher-student relationship, it is time-consuming to collect, and is not a reliable source of data to be used for intervention planning.

**Toward a More Complete Understanding of Teacher-Student Relationships**

If the teacher-student relationship is conceptualized as alterable, it would follow that the elements that comprise the teacher-student relationship should all be alterable and within teachers' control. Elements that are outside of teachers' control because they are either descriptions of student affect or behavior or are dynamic interactions (e.g., conflict,

dependency) are not included in this definition of teacher-student relationships and teacher support, which focuses on the positive contextual factors that teachers can provide to support students' needs. This differs from much of the past research in this area, since the focus is not on describing the features of the relationship itself, but only on the elements that may potentially be targeted as areas of intervention.

**Bringing the definitions and research together.** In a broad sense, teacher-student relationships and teacher support can be conceptualized as being able to support the student needs of competence ("I can"), autonomy ("I want to"), and relatedness ("I belong") (Connell & Wellborn, 1991; NRC, 2004). These three needs can be expanded to include the need for academic press, since the self-system definition of competence (Connell & Wellborn, 1991) does not necessarily include the element of academic press as defined by Phillips (1997), Lee and Smith (1999), or Shouse (1996). In addition, Connell and Wellborn's description of the need for autonomy (1991) does not include all of the aspects of mastery goal orientation described by Ames (1992).

It is clear that the teacher-student relationship includes more than just affective aspects. The teacher-student relationship also includes the academic support that teachers provide, including academic press and support for students' autonomy and mastery goals. Teachers can provide support for student needs by providing structure, autonomy support, and involvement, (Connell and Wellborn, 1991) but also by providing academic press in the form of high academic expectations (with support to reach those expectations) and support for mastery goals with a focus on learning and effort. If student needs are met by the supports provided by their teachers, it is hypothesized that this will

lead to student engagement, which will then lead to positive academic, behavioral, and social/emotional outcomes for students.

**Measuring Teacher-Student Relationships and Teacher Support.** Although much of the research studies on teacher-student relationships and associated outcomes have used teacher report measures (e.g., Baker, 2006, Decker et al., 2007; Hamre & Pianta, 2001), it may be argued that understanding the quality of the relationship that students actually experience is vitally important for intervention planning (Connell & Wellborn, 1991). Understanding student perceptions of teacher-student relationships is paramount because of the reciprocal nature of the relationship (Skinner & Belmont, 1993), and the fact that while teachers and students have been found to differ in their perceptions, relationships with teachers are important to students even when their teachers viewed the relationship negatively (Decker et al., 2007). In addition, measuring students' perceptions helps to control for the fact that the teacher-student relationship may vary greatly between individuals within the same classroom (Meece et al., 2006), and teachers themselves may not be able to accurately judge how their instruction is being perceived by the students in the classroom. "Students have different classroom experiences, but because they also bring different prior experiences with them, they may interpret a teacher-student interaction or event quite differently. Thus, to predict and examine motivated cognitions, affect, and behavior of a student, it is necessary to attend to how that student perceives and gives meaning to classroom experiences" (Ames, 1992, p. 267).

Currently, there is not any one measure that was designed for the purpose of assessing adolescent student perceptions of the teacher-student relationship and incorporates research on the student needs of competence, autonomy and relatedness (Connell & Wellborn, 1991), as well as academic press and support for mastery goal orientation, which have often been measured separately, yet have all been found to be related to student outcomes of interest.

The instrument that is most closely aligned with the newly proposed model of teacher-student relationships is the *Research Assessment Package for Schools* (RAPS; Institute for Research and Reform in Education, 1998). This assessment is a comprehensive survey with versions for both teachers and students that was created to help schools in their school improvement efforts. The RAPS student self-report questionnaire was designed to measure student engagement and student beliefs about the support that they receive from adults at home and at school, specifically in the areas of competence, autonomy, and relatedness (Institute for Research and Reform in Education, 1998). Unfortunately, the RAPS does not specifically address student perceptions of teacher support for academic press and mastery goal orientation, which are key elements of the new model of teacher-student relationships and teacher support identified by this literature review. However, the *Patterns for Adaptive Learning Scales* (PALS; Midgley et al., 2000) was designed to examine the relationships between the classroom environment created by teachers and students' motivation, affect, and behavior, using the framework of goal orientation theory. Within the student-report scales, there is one subscale

measuring student perceptions of teacher mastery-goal orientation, and one measuring academic press.

In order to identify aspects of the teacher-student relationship that may be amenable to intervention, student perceptions of the relationship and the support provided by their teachers could be measured using items from both of these student-report measures. Specifically, the subscales related to students' needs for competence, autonomy, and relatedness, and teachers' provision of academic press and mastery goal orientation could be combined to create a new survey that includes identified elements from the relevant research in this area.

**Summary**

Teacher-student relationships provide the context through which students experience both the classroom and the school, and have the potential to positively impact student engagement as well as academic, behavioral, and social/emotional student outcomes. The transition to middle school is thought to be a particularly difficult time for students, and teachers may serve an important role in helping students successfully navigate this transition. Although much of the literature has suggested improving the relationship between teachers and students in order to improve social and academic outcomes for students, few studies have examined aspects of the teacher-student relationship that are alterable and amenable to intervention. Additionally, there has been little agreement about the important aspects of the teacher-student relationship, with the affective elements of the relationship often being measured separately or in opposition to the elements related to academic press.

A measure of teacher-student relationships that serves as an assessment to intervention link is necessary if we are to target our intervention efforts towards alterable elements of the teacher-student relationship. Specifically, an instrument that measures both the affective and the academic aspects of the teacher-student relationship from an adolescent student perspective is needed, as both high levels of caring and high levels of academic press have been found to lead to positive outcomes for students. There have been only a handful of studies that examined the teacher-student relationship from the perspective of adolescents, and they all included a number of limitations. Measures that have been used in the past have focused more on the relationship from an attachment perspective rather than a motivational one, have not been designed specifically for the purpose of measuring the teacher-student relationship, or have focused only on one element of the relationship. In addition, more research is needed which examines the perspective of adolescents attending diverse, urban schools, as these students may uniquely benefit from aspects of the teacher-student relationship.

The main purpose of this study was to determine the relationship between urban middle school students' perceptions of the support provided by their teachers, and student engagement, behavior, and academic success. The research study used a student self-report instrument created from existing measures that focused on the alterable aspects of the relationship between teachers and their adolescent students, including teacher support for the needs of competence, autonomy, and relatedness, as well as teacher support for academic press and mastery goal orientation.

## Research Questions

This study endeavored to answer the following six research questions:

1. What is the factor structure of the newly created measure of teacher-student relationships and teacher support?
2. What is the relationship between students' ratings of teacher support and their self-reported engagement?
3. What is the relationship between students' ratings of teacher support and their teachers' ratings of student engagement?
4. How much of the variance in student behavioral outcomes can be predicted by student perceptions of teacher support, controlling for demographic variables?
5. How much of the variance in student academic outcomes can be predicted by student perceptions of teacher support, controlling for demographic variables?
6. To what extent does student engagement mediate the relationship between teacher support and student outcomes?

# Chapter 3

# Method

## Participants and Setting

Data for this study were collected from 102 middle school students in 5th – 8th grade and 15 teachers at an at an urban charter school in a large Midwestern city. The charter school serves a predominantly African American, low-income student population. This population is of particular interest because of research evidence suggesting that teacher-student relationships may serve as a uniquely protective factor for low-income students and students of color (Decker et al., 2007; Malecki & Demaray, 2006).

The charter school chosen for the research study was a member of a national network of college-preparatory charter schools designed to close the achievement gap between white students and students of color and teach students the academic skills and character traits necessary to be successful in college. As a charter school, the school was not bound by typical school policies and practices set by teacher union contracts or district policies, but was still accountable to its stakeholders to show student academic progress and fiscal responsibility. Enrollment in the charter school was viewed as a choice and when students enrolled in the school, the teachers, parents, and student were asked to sign a "commitment to excellence form", pledging to uphold the school standards and put in the effort necessary for academic success. The school had extended school hours, starting earlier in the day and ending later in the afternoon than other public middle schools in the area. In addition to the long school day, the teachers at the school were provided with cell phones, and were expected to answer phone calls from students

until 8:00 p.m. each weeknight in order to give students the opportunity for additional help with homework assignments.

Students at the school were held to high standards of conduct and academic achievement. All students were expected to come to school in uniform, which included tucked-in shirts and belts. Students were expected to walk quietly in the hallway at all times, and were required to have teacher permission in order to get a drink or go to the bathroom. During down time, students were expected to "assign themselves" by reading a book or working on homework rather than socializing.

As evidenced in Table 1, the participants were evenly distributed among grades, and there were fairly equal numbers of males and females. About 20% of the participants were receiving Special Education services. Students' racial/ethnic background was not investigated as a demographic variable, since the student population did not have enough students to form any other meaningful categories besides African American, so comparisons by race/ethnicity would not have been possible. Anecdotally, while the student population was primarily African American, the teaching staff was predominantly Caucasian.

Table 1

*Demographic Information*

| | N | Percentage |
|---|---|---|
| Grade | | |
| 5th grade | 21 | 20.6 |
| 6th grade | 29 | 28.4 |

| | | |
|---|---|---|
| 7th grade | 27 | 26.5 |
| 8th grade | 25 | 24.5 |
| Gender | | |
| Male | 50 | 49 |
| Female | 52 | 51 |
| Special Education Status | | |
| General Education | 81 | 79.4 |
| Special Education | 21 | 20.6 |

At the time the research was conducted, the school had 136 students enrolled, which indicates that the research study included 75% of the students at the school. The students who did not participate were excluded for a number of reasons: 8 students' parents returned the form opting out of the research, 11 did not give their assent when the survey was administered in their classroom, and the remaining 15 students were absent from class on the day the survey was administered. Some of the absent students were taking a make-up test, and a few students were suspended on the day the survey was administered.

**Procedures**

Students were administered the 36-item *Measure of Teacher Caring and Support and Student Engagement – Student Report* (see Appendix A) survey at the classroom level. The researcher administered the survey to students during their Spanish class (all students in the school took Spanish). Each classroom was surveyed over the course of two days. Students were given the opportunity to opt out of the research in the form of a letter that

was sent home to all families, explaining the research, and giving families the opportunity to choose not to participate. At the time that the surveys were distributed, students were also given the opportunity to give their assent to participate by signing a form explaining the research study.

Each student received a survey that was pre-marked with a randomly generated identification number, so that it would be clear to students that their names were not linked to their answers on the survey. Students' names were attached to the survey sheet using sticky-notes, which were removed after the surveys were distributed. The researcher read the survey items out loud to the students in order to ensure that reading level would not be a barrier to accurately answering any of the items.

The students' teachers were asked to complete teacher ratings of student engagement for each of their students, and these ratings were averaged to create a mean Teacher-Rated Engagement score for each student. After the teachers rated the engagement of each of the students in their classes, the data was de-identified using the same randomly generated number for each student that was attached to the student survey.

Student data, including demographic data, academic data, and behavior data, were collected at the end of the school year, after students completed their standardized testing and final grades had been entered.

## Measures

**Measure of Teacher Support and Student Engagement.** Students were administered a 36-item survey, the *Measure of Teacher Support and Student Engagement – Student Report* (see Appendix A), which was compiled from three existing measures

for use in this study. The survey contained items measuring student perceptions of teacher support for competence, autonomy, and relatedness, teacher mastery goal orientation, teacher academic press, and self-reported engagement.

***Teacher support for competence, autonomy, and relatedness.*** Student perceptions of their teacher's support for the needs of competence, autonomy, and relatedness were measured using the fourteen items that comprise the Experiences of Support from Teachers Subdomain of *The Research Assessment Package for Schools* (RAPS; Institute for Research and Reform in Education, 1998; see Appendix A). The Experiences of Support from Teachers Subdomain is comprised of three factors: five Teacher Involvement items (support for relatedness), four Teacher Autonomy Support items, and five Teacher Structure items (support for competence). The response set for the RAPS subscales utilized a 4-point Likert-type scale, with choices ranging from "Not at all true" to "Very true". Negatively worded items were reverse-coded for scoring purposes. The developers of the RAPS have reported that the Experiences of Support from Teachers subdomain has acceptable internal consistency, with a coefficient alpha of .82, and that the same subdomain had an inter-item correlation of .25 (Institute for Research and Reform in Education, 1998).

***Teacher mastery goals and academic press.*** Student perceptions of their teacher's use of mastery goals in the classroom and academic press were measured using the Teacher Mastery Goal (5 items) and Academic Press (7 items) subscales of the *Patterns for Adaptive Learning Scales* (PALS; Midgley et al., 2000; see Appendix A). Although the original response set for the PALS subscales utilized a 5-point Likert-type

scale, with choices ranging from “Not at all true” to “Very True”, the scale was changed to a 4-point Likert-type scale in order to match the previous items, and be easier for students to use. Again, the negatively worded items were reverse-coded for scoring purposes.

Both the RAPS and the PALS have been used in previous research with elementary and middle school students (Connell & Wellborn, 1991; Gregory & Weinstein, 2008; Klem & Connell, 2004), and have reliability and validity evidence to support their use. For the RAPS, the manual reports that the 14 items that comprise the Experiences of Support from Teachers Subdomain has a coefficient alpha level of .82 (Institute for Research and Reform in Education, 1998). For the PALS, the developers report a coefficient alpha level of .83 for the Teacher Mastery Goal scale, and a coefficient alpha level of .79 for the Academic Press scale (Midgley et al., 1998; Midgley et al., 2000).

The items in the first two sections of the student survey ask students to react to various statements regarding “my teacher”, but each of the participating students were taught by multiple teachers throughout their school day. In order to address this fact, students were instructed to take a moment to think about one of their teachers before the researcher began reading the survey questions. Students were instructed to keep that teacher in mind when answering the survey questions.

***Student Engagement.*** The 36-item *Measure of Teacher Support and Student Engagement – Student Report* included a measure of students’ self-reported engagement (see Appendix A). Engagement was measured using the Behavioral Engagement (5

items) and Emotional Engagement (5 items) subscales of *Engagement Versus Disaffection With Learning: Student-Report* (Skinner et al., 2008; Skinner, Kindermann, and Furrer, 2009). The response set for all of the items utilized a 4-point Likert-type scale, with choices ranging from "Not at all true" to "Very True". In this study, student engagement was hypothesized to mediate the relationship between perceived teacher support and positive student outcomes, therefore, only the positively worded student engagement items were included. The items measuring disaffection were not included, since disaffection was not a variable of interest in the current study.

Teacher-reported student engagement was also measured by having each teacher ($5^{th}$ – $8^{th}$ grade) rate the engagement of each student in their classes based on Skinner and Pitzer's (2012) conceptualization of behavioral, emotional, and cognitive engagement. In this model, behavioral engagement includes effort and perseverance, emotional engagement includes enthusiasm and enjoyment, and cognitive engagement includes attention, focus, and participation (Skinner & Pitzer, 2012). Teachers were asked to rate each of their students' engagement on a scale of 1-10, representing the percent of time that the student was engaged in class (see Appendix B). Since each student had multiple teachers, their teachers' ratings were averaged to create a Teacher-Rated Engagement score that represented the percent of time that each student was perceived by their teachers to be engaged in their classes.

**Behavior outcomes**. Participating students' behavior was measured using two indicators. Assignment to enrichment detention was examined as an indicator of negative,

non-compliant behavior, while paycheck "dollars" were used an indicator of on-task behavior and rule compliance.

***Enrichment detention.*** Since the school day at this school was quite long, students who had disciplinary problems during the school day were not assigned to after-school detention, but were assigned to enrichment detention, in which they had to miss their enrichment classes at the end of the school day and instead sit quietly in a classroom. Students' total number of times assigned to enrichment detention between the months of March and May was tabulated at the end of the school year as a "snapshot" of student behavior.

***Paycheck Dollars.*** Daily "paycheck" dollars were used at the school as an incentive to reward students for on-task behavior and rule compliance. Students were awarded a certain number of "dollars" by their teachers for each class period if they followed the classroom expectations, and could earn up to 80 "dollars" per day. There were weekly, monthly, and end-of year rewards that students could purchase with the "dollars" they had earned. Each week, students at the school received a "paycheck" which indicated their weekly and year-to-date "dollars" earned. Students' total number of paycheck dollars was calculated at the end of the school year.

**Academic outcomes.** Student academic achievement was measured using two sources of data: grade point average (GPA), and Northwest Evaluation Association (NWEA) benchmark assessment (Measures of Academic Progress [MAP]) reading scores.

***GPA.*** Student GPA was measured at the end of the school year using a 0.0 to 4.0 scale, with 4.0 equivalent to all "A" grades.

***Measures of Academic Progress (MAP).*** Students' MAP Reading scores from the spring benchmarking period were used as an additional indicator of academic achievement. The Measures of Academic Progress (MAP) is a nationally-normed computer-based adaptive assessment that adjusts to a student's ability level. Scores for the MAP are presented as RIT Scale scores. The RIT scale uses item difficulty values to estimate student achievement, and is an equal interval scale (Northwest Evaluation Association, 2013a). MAP scores are used to measure student growth, and three benchmark assessments are administered over the course of each school year (fall, winter, spring). The NWEA MAP tests have been found to have a significant amount of reliability and validity evidence to support their use in measuring student academic ability and growth (Northwest Evaluation Association, 2013b). Although students' MAP scores in the areas of Reading, Math, and Language were collected, only students' MAP Reading scores were used for data analysis because they were the most complete, as several students were involved in a disciplinary incident which occurred right after the MAP Reading test, but before the Math and Language MAP tests were administered. MAP Reading scores were available for all 102 student participants.

**Student demographic data**. Student grade, gender, and Special Education status were tracked using student identification numbers. These demographic variables were examined in the data analysis because past research has found a relationship between certain student demographic variables, teacher-student relationships, and student

outcomes (e.g., Baker, 2006; Furrer & Skinner, 2003; Murray & Murray, 2004; Roorda, et al., 2011). For example, a meta-analysis found the student characteristics of grade level, gender, and learning difficulties to be among a number of characteristics that moderated the associations between teacher-student relationships and student engagement and achievement (Roorda et al., 2011). These demographic variables were gathered to investigate the impact of student demographic variables on the relationship between the independent variables and the student outcome variables of interest.

**Data Analysis**

A power analysis was completed before data collection, using G*Power, an online statistical power analysis tool (Faul, Erdfelder, Lang, & Buchner, 2007). The analysis revealed that if a unidirectional (one-tailed) *t*-test was completed, such as the kind that is used in linear multiple regression, and the significance level is set at $\alpha = .05$, the study would need a minimum of 74 students in order to obtain meaningful results. Since 102 students at the school participated in the survey, the study had a large enough student sample to obtain meaningful results.

In order to address the first research question, exploratory and confirmatory factor analyses were completed to examine the factor structure of the scales that comprised the student survey. The internal consistency of the identified factors was then further investigated using item-total correlation tests of reliability.

In order to address the second and third research questions regarding the relationship between students' ratings of teacher support and student engagement (as

rated by students and teachers), correlational analyses were completed, since data in these areas were gathered at the same time as separate sections of the same student survey.

In order to address research questions four through six, multiple regression analyses were utilized, and student engagement was investigated as a mediator variable.

It was hypothesized that the variance in the data would be best explained by more than one single factor, but since many of the items tapped into similar concepts related to teacher support for student needs, it was unclear how many factors would emerge. It was also hypothesized that student ratings of teacher support would be significantly and positively correlated with student engagement, and that student engagement would be found to be a mediator variable. Higher ratings of teacher support were hypothesized to be related to higher ratings of student engagement, which would then predict positive student outcomes (i.e., lower numbers of enrichment detentions, higher "paycheck" dollars, higher MAP test scores, and higher GPA).

# Chapter 4

# Results

## Descriptive Data and Correlations

After the data were collected, descriptive data and correlations between all of the variables were calculated. Items that were negatively worded were identified and reverse-coded before data analysis. The descriptive data can be found in Table 2, and the correlations can be found in Table 3. The independent variables described in the tables include two identified factors that emerged from the factor analysis: Teacher Caring and Support and Teacher Press for Academic Thought. The factor analysis, and the process by which these factors were identified will be discussed when the first research question is addressed.

Table 2

*Descriptive Data*

| Variable | N | Mean | Standard Deviation | Minimum | Maximum | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| Independent Variables | | | | | | | |
| Teacher Caring and Support | 102 | 2.90 | .76 | 1.15 | 4.00 | -.49 | -.81 |
| Teacher Press for Academic Thought | 102 | 3.12 | .72 | 1.00 | 4.00 | -1.10 | 1.14 |
| Student-Rated Engagement | 102 | 3.13 | .53 | 1.00 | 4.00 | -.833 | 1.483 |
| Teacher-Rated Engagement | 102 | 7.15 | 1.23 | 3.75 | 9.80 | -.10 | -.03 |
| Dependent Variables | | | | | | | |
| Enrichment Detention | 102 | 2.43 | 2.51 | 0 | 10 | .909 | .272 |
| Paycheck Dollars | 98 | 11222.06 | 1168.25 | 8620 | 14025 | -.327 | -.170 |
| MAP Reading | 102 | 216.91 | 11.89 | 179 | 240 | -.475 | .186 |
| GPA | 102 | 2.72 | .78 | 1.00 | 4.00 | -.287 | -.531 |

*Note*. The variables Teacher Caring and Support, Teacher Press for Academic Thought, and Student-Rated Engagement were on scales from 1-4, where 1 = Not at all true, 4 = Very true. Teacher-Rated Engagement was measured on a scale of 1-10, representing the percentage of time students were engaged. Enrichment Detention measured the number of enrichment detentions between March and May 2013. Paycheck Dollars represented the total number of "dollars" awarded to each student. MAP Reading scores were presented as RIT scale scores, and GPA was measured on a 0.0 to 4.0 scale, with 4.0 equivalent to all "A" grades.

Table 3

*Correlations Between Variables*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Teacher Caring and Support | __ | | | | | | | |
| *2.* Teacher Press for Academic Thought | .66** | __ | | | | | | |
| 3. Student-Rated Engagement | .63** | .45** | __ | | | | | |
| 4. Teacher-Rated Engagement | .23* | .23* | .18* | __ | | | | |
| 5. Enrichment Detention | -.29** | -.40** | -.24** | -.53** | __ | | | |
| 6. Paycheck Dollars | .13 | .15 | .04 | .58** | -.63** | __ | | |
| 7. MAP Reading | .02 | .19* | -.09 | .40** | -.36** | .30** | __ | |
| 8. GPA | .047 | .12 | -.05 | .72** | -.32** | .53** | .46** | __ |

*Note.* ** = $p < .01$; * = $p < .05$

The variables were not all found to be normally distributed. Teacher Press for Academic Thought, Student-Rated Engagement, and Enrichment Detention were all found to have elevated indicators of skewness or kurtosis. In the case of Teacher Press for Academic Thought and Student-Rated Engagement, students' mean scores indicated that students generally agreed with statements regarding their teachers' press for academic thought and their own levels of engagement, causing these variables to be negatively skewed, with more scores on the upper end of the scale. The high values for kurtosis indicate that the variability in the scores was caused by a few outliers; most of the scores were clustered around the mean. In the case of Enrichment Detention, there were a number of students who were not assigned any enrichment detentions, creating a positively skewed distribution with significantly more scores on the lower end of the scale. However, the data were normally distributed enough to proceed with data analysis.

The correlation analysis revealed that the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought were significantly correlated ($r$ = .66, $p$ < .01). When independent variables are highly correlated, it can be described as multicollinearity, which may lead to difficulty interpreting the results of regression analyses. There is no consensus regarding what level of correlation is thought to be too high (Pedhazur & Schmelkin, 1991). While it is not unexpected that independent variables would not be entirely independent, it should be noted that correlation between independent variables could lead to a reduction in the regression coefficients for each of the variables in multiple regression analyses (Pedhazur & Schmelkin, 1991). The correlation analysis also revealed that two of the student outcome variables, Paycheck Dollars and GPA, were not significantly correlated with any of the student-rated independent variables (Teacher Caring and Support, Teacher Press for Academic Thought, or Student-Rated Engagement). All of the student outcome variables were found to be significantly correlated with Teacher-Rated Engagement, with GPA being the most highly correlated with Teacher-Rated Engagement ($r$ = .72, $p$ < .01).

**Research Question 1**

What is the factor structure of the newly created measure of teacher-student relationships and teacher support?

**Exploratory factor analysis.** In order to answer the first research question, an exploratory factor analysis of the *Measure of Teacher Support and Student Engagement – Student Report* was completed. An exploratory factor analysis was used because although the measure included items from existing surveys which addressed five elements of

teacher support identified in the literature (i.e., Teacher Mastery Goal, Academic Press, Teacher Structure, Teacher Autonomy Support, and Teacher Involvement), no research evidence could be found to indicate that each of these five elements would be an independent factor, and there was no specific research theory describing how these five elements would be related to each other.. In the manuals for the surveys from which the items were gathered, the reliability and validity evidence did not include factor analyses (Institute for Research and Reform in Education, 1998; Midgley et al., 2000).

***Initial six-factor model.*** The exploratory factor analysis using a Varimax rotation found that a six-factor model explained 66% of the variance in the data. Items with factor loadings above .4 were considered to "hang together" as factors. Table 4 shows the factor loadings for each of the items, and the initial six factors that were created, not all of which were retained in the final model.

Table 4

*Factor Loadings of the Measure of Teacher Support and Student Engagement – Student Report*

| Item | Factor | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Factor 1: Teacher Caring and Support | | | | | | |
| 5. My teacher gives us time to really explore and understand new ideas. (Teacher Mastery Goal) | **.757** | .016 | -.131 | .131 | .202 | .139 |
| 18. My teacher thinks what I say is important. (Teacher Autonomy Support) | **.738** | .115 | .179 | .137 | .203 | .144 |
| 24. My teacher likes to be with me. (Teacher Involvement) | **.696** | .344 | -.172 | -.043 | .255 | .131 |
| 4. My teacher recognizes us for trying hard. (Teacher Mastery Goal) | **.692** | .339 | .202 | .162 | .146 | -.017 |
| 20. My teacher has plenty of time for me. (Teacher Involvement) | **.690** | .109 | .115 | .073 | .319 | .338 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17. My teacher is fair with me. (Teacher Structure) | **.669** | .052 | .322 | .128 | -.106 | .236 |
| 26. My teacher likes the other kids in my class better than me. (negative) (Teacher Involvement) | **.662** | .257 | .174 | -.019 | -.198 | .372 |
| 21. My teacher isn't fair with me. (negative) (Teacher Structure) | **.648** | .230 | .513 | .046 | .107 | .005 |
| 16. My teacher interrupts me when I have something to say. (negative) (Teacher Autonomy Support) | **.641** | .058 | .268 | .196 | .006 | -.005 |
| 3. My teacher wants us to enjoy learning new things. (Teacher Mastery Goal) | **.618** | .357 | -.069 | -.057 | .085 | -.313 |
| 14. My teacher cares about how I do in school. (Teacher Involvement) | **.592** | .144 | .210 | .198 | .397 | -.115 |
| 13. My teacher doesn't seem to have enough time for me. (negative) (Teacher Involvement) | **.582** | .172 | .329 | .132 | -.180 | -.083 |
| 2. My teacher wants us to understand our work, not just memorize it. (Teacher Mastery Goal) | **.529** | .203 | -.121 | .462 | -.237 | -.004 |
| Factor 2: Teacher Press for Academic Thought | | | | | | |
| 7. My teacher presses me to do thoughtful work. (Academic Press) | .088 | **.724** | .098 | .159 | .216 | .258 |
| 6. When I've figured out how to do a problem, my teacher gives me more challenging problems to think about. (Academic Press) | .182 | **.696** | -.153 | .101 | .348 | .197 |
| 1. My teacher thinks mistakes are okay as long as we are learning. (Teacher Mastery Goal) | .400 | **.670** | .079 | .141 | -.212 | -.213 |
| 10. My teacher doesn't let me do just easy work, but makes me think. (Academic Press) | .416 | **.423** | .175 | .270 | .372 | -.213 |
| Factor 3: Teacher Expectations and Control* | | | | | | |
| 19. My teacher doesn't make clear what he/she expects of me in school. (negative) (Teacher Structure) | .031 | -.173 | **.760** | -.034 | .147 | .086 |
| 22. My teacher tries to control everything I do. (negative) (Teacher Autonomy Support) | .486 | .122 | **.591** | .016 | -.067 | .173 |
| 25. My teacher's expectations for me are way off base. (negative) (Teacher Structure) | .404 | .472 | **.493** | -.039 | -.049 | .077 |
| 15. The rules in my classrooms are clear. (Teacher Structure) | .056 | .212 | **.471** | .466 | -.036 | .224 |
| Factor 4: Press for Effort* | | | | | | |
| 8. My teacher asks me to explain how I get my answers. (Academic Press) | .032 | .080 | -.011 | **.859** | .069 | .156 |
| 12. My teacher accepts nothing less than my full effort. (Academic Press) | .201 | .034 | .058 | **.767** | .277 | -.102 |
| Factor 5: Thoughtful Work* | | | | | | |
| 9. When I'm working out a problem, my teacher tells me to keep thinking until I really understand. (Academic Press) | .060 | .111 | .064 | .112 | **.848** | .020 |
| 11. My teacher makes sure that the work I do really makes me think. (Academic Press) | .259 | .296 | -.056 | .429 | **.488** | -.001 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Factor 6: Lack of Explanation* | | | | | | |
| 23. My teacher doesn't explain why we have to learn certain things in school. (negative) (Teacher Autonomy Support) | .270 | .164 | .263 | .120 | .020 | **.689** |

*Note.* * = Not retained

***Refining the model.*** The factor analysis revealed that the first two factors explained the majority of the variance, and each contained items from more than one of the hypothesized elements of teacher support. The first factor, which will be referred to as Teacher Caring and Support, explained 36.27% of the variance, and contained 13 items. The Teacher Caring and Support factor included items from four of the five hypothesized elements of teacher support (Teacher Structure, Teacher Autonomy Support, Teacher Involvement, and Teacher Mastery Goal Orientation). Four items were from the Teacher Mastery Goal set of survey questions, five items were from the Teacher Involvement set of survey questions, two were from the Teacher Autonomy Support items, and two were from the Teacher Structure Items. The following items were included in the Teacher Caring and Support factor:

2. My teacher wants us to understand our work, not just memorize it. (Teacher Mastery Goal)

3. My teacher wants us to enjoy learning new things. (Teacher Mastery Goal)

4. My teacher recognizes us for trying hard. (Teacher Mastery Goal)

5. My teacher gives us time to really explore and understand new ideas. (Teacher Mastery Goal)

13. My teacher doesn't seem to have enough time for me. (negative) (Teacher Involvement)

14. My teacher cares about how I do in school. (Teacher Involvement)

20. My teacher has plenty of time for me. (Teacher Involvement)

24. My teacher likes to be with me. (Teacher Involvement)

26. My teacher likes the other kids in my class better than me. (negative) (Teacher Involvement)

16. My teacher interrupts me when I have something to say. (negative) (Teacher Autonomy Support)

18. My teacher thinks what I say is important. (Teacher Autonomy Support)

17. My teacher is fair with me. (Teacher Structure)

21. My teacher isn't fair with me. (negative) (Teacher Structure)

The second factor, which will be referred to as Teacher Press for Academic Thought, explained 9.05% of the variance, and contained items from the Academic Press and Teacher Mastery Goal sets of items on the student survey. All of the items were related to academic thinking. The following items were included in the Teacher Press for Academic Thought factor:

1. My teacher thinks mistakes are okay as long as we are learning. (Teacher Mastery Goal)

6. When I've figured out how to do a problem, my teacher gives me more challenging problems to think about. (Academic Press)

7. My teacher presses me to do thoughtful work. (Academic Press)

10. My teacher doesn't let me do just easy work, but makes me think. (Academic Press)

The third factor, Teacher Expectations and Control, which explained 6.67% of the variance, and contained four items that all related to teacher expectations for behavior, was not retained in the final model. This factor was problematic for a number of reasons: three of the four items were negatively worded, three of the items had factor loadings above .4 with other factors, and one of the items (item 19) had a negative factor loading with the previously identified Teacher Press for Academic Thought factor, indicating that this item was not related to other items in the expected direction. Additionally, the item-total correlation tests of reliability that are described below provided further evidence that this factor should not be retained. The remaining three factors, which were labeled Press for Effort, Thoughtful Work, and Lack of Explanation, each contained two or fewer items, and were also not retained in the final model, as they were not thought to be meaningful factors. Ultimately, only the factors of Teacher Caring and Support and Teacher Press for Academic Thought were retained in the final model.

**Item-total correlation.** The two-factor model was further examined using an item-total correlation test to examine the internal consistency of the items. Item-total correlation tests were run for each of the two identified factors (Teacher Caring and Support and Teacher Press for Academic Thought). In addition, an item-total correlation test was run for the third factor (*Teacher Expectations and Control*), in order to confirm its exclusion from the final model.

Cronbach's Alpha was found to be .92 for the 13-item Teacher Caring and Support factor, and Cronbach's Alpha was found to be .75 for the four-item Teacher Press for Academic Thought factor. The internal consistency was acceptable for research

purposes for both factors, with both estimates over .7 (Nunnally, 1978). The decision to not retain the *Teacher Expectations and Control* factor was further supported by a relatively low level of internal consistency (α = .58) among the four items, and fairly weak correlations between the items, with the correlations between items 15 and 19 and the other items all below .3.

**Confirmatory factor analysis.** In order to confirm that the two factor model best fit the data, a confirmatory analysis was completed using the 17 items that were contained in the two identified factors: Teacher Caring and Support and Teacher Press for Academic Thought. The analysis was completed using a software program called M-Plus, using maximum likelihood estimation. The goodness of fit indicators from the confirmatory factor analysis can be found in Table 5.

Table 5

*Goodness-of-Fit Indicators for the Two-Factor Model (n = 102)*

| Model | $\chi^2$ | *df* | $\chi^2/df$ | Root Mean Square of Approximation (RMSEA) | Comparative Fit Index (CFI) | Tucker-Lewis Index (TLI) | Standardized Root Mean Square Residual (SRMR) |
|---|---|---|---|---|---|---|---|
| Two-Factor Model (Teacher Caring and Support and Teacher Press for Academic Thought) | 172.44*** | 118 | .917 | .067 | .928 | .917 | .062 |

*Note.* *** = $p < .001$

Scheiber, Nora, Stage, Barlow, and King (2006) summarize recommendations for determining if a model is an acceptable fit for the data. According to their summary of the recommendations found in the research, the following rules of acceptable fit can be applied: the ratio of chi-square ($\chi^2$) to degrees of freedom (*df*) should be ≤ 2 or 3, the root mean square of approximation (RMSEA) should be < .06 to .08, the comparative fit

index (CFI) should be ≥ .95 for acceptance, the Tucker-Lewis index (TLI) should be ≥ .95 or between 0 and 1 for acceptance, and the standardized root mean square residual (SRMR) should be ≤ .08. They recommend that if the majority of the indexes indicate a good fit, then the model is probably a good fit. Based on accepted interpretations of fit indexes, the two-factor model was found to be a good fit for the data.

In addition, as can be seen in Table 6, the standardized model results found that the factor loadings were above .4 for each of the items within the two factors, with significant *p*-values of < .001, and there were no cross-loadings indicated. These results provided additional evidence that the two-factor model was appropriate for the observed data.

Table 6

*Factor Loadings for the Two-Factor Model*

| Item | Estimate |
|---|---|
| Factor 1: Teacher Caring and Support | |
| 2. My teacher wants us to understand our work, not just memorize it. (Teacher Mastery Goal) | .494 |
| 3. My teacher wants us to enjoy learning new things. (Teacher Mastery Goal) | .627 |
| 4. My teacher recognizes us for trying hard. (Teacher Mastery Goal) | .754 |
| 5. My teacher gives us time to really explore and understand new ideas. (Teacher Mastery Goal) | .639 |
| 13. My teacher doesn't seem to have enough time for me. (negative) (Teacher Involvement) | .601 |
| 14. My teacher cares about how I do in school. (Teacher Involvement) | .706 |
| 16. My teacher interrupts me when I have something to say. (negative) (Teacher Autonomy Support) | .582 |
| 17. My teacher is fair with me. (Teacher Structure) | .690 |
| 18. My teacher thinks what I say is important. (Teacher Autonomy Support) | .758 |
| 20. My teacher has plenty of time for me. (Teacher Involvement) | .757 |
| 21. My teacher isn't fair with me. (negative) (Teacher Structure) | .708 |
| 24. My teacher likes to be with me. (Teacher Involvement) | .765 |
| 26. My teacher likes the other kids in my class better than me. (negative) (Teacher Involvement) | .724 |
| Factor 2: Teacher Press for Academic Thought | |
| 1. My teacher thinks mistakes are okay as long as we are learning. (Teacher Mastery Goal) | .619 |
| 6. When I've figured out how to do a problem, my teacher gives me more challenging problems to think about. (Academic Press) | .645 |

| | |
|---|---|
| 7. My teacher presses me to do thoughtful work. (Academic Press) | .616 |
| 10. My teacher doesn't let me do just easy work, but makes me think. (Academic Press) | .685 |

The final two-factor model, containing 17 items, identified two distinctive, meaningful factors: Teacher Caring and Support and Teacher Press for Academic Thought. Mean scores for each student were calculated for both Teacher Caring and Support and Teacher Press for Academic Thought, and these factors were analyzed separately in further data analyses.

**Research Question 2**

What is the relationship between students' ratings of teacher support and their self-reported engagement?

In order to answer the second research question, the correlation between the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought and Student-Rated Engagement were examined. The correlation between Teacher Caring and Support and Student-Rated Engagement Average Score was significant, positive, and moderately strong ($r = .63$, $p < .001$), and the correlation between Teacher Press for Academic Thought and Student-Rated Engagement Average Score was significant, positive, and moderate ($r = .45$, $p < .001$).

**Research Question 3**

What is the relationship between students' ratings of teacher support and their teachers' ratings of student engagement?

In order to answer the third research question, the correlation between the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought and Teacher-Rated Engagement were examined. The correlation between

Teacher Caring and Support and Teacher-Rated Engagement Average Score was significant and positive ($r = .23$, $p < .05$), but was a low moderate correlation. The correlation between Teacher Press for Academic Thought and Teacher-Rated Engagement was also significant and positive ($r = .23$, $p < .05$), but was also a low moderate correlation.

The correlation between Student-Rated Engagement and Teacher-Rated Engagement was also examined, and was found to be significant ($p < .05$), but was a weak correlation ($r = .18$), indicating that students and teachers did not entirely agree on their level of engagement.

**Research Question 4**

How much of the variance in student behavioral outcomes can be predicted by student perceptions of teacher support, controlling for demographic variables?

To examine the effects of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on the measured behavioral outcomes controlling for the demographic variables of student grade, gender, and Special Education status, interaction terms were first created by multiplying Teacher Caring and Support and Teacher Press for Academic Thought scores by grade (dummy coded), gender, and special education status. A multiple regression analysis was then completed, including all independent variables and demographic variables in the first block, and all of the interaction terms in the second block. The results of these regression analyses can be found in Table 7.

Table 7

*Regression Results for the Interaction Between the Independent Variables and the Demographic Variables for Behavioral Outcomes*

| | Behavioral Outcomes | | | |
|---|---|---|---|---|
| | Paycheck Dollars | | Enrichment Detention | |
| Predictor | $\Delta R^2$ | β | $\Delta R^2$ | β |
| Step 1 | .12 | | .22** | |
| Teacher Caring and Support | | .02 | | -.03 |
| Teacher Press for Academic Thought | | .20 | | -.40** |
| 6th grade | | -.07 | | -.03 |
| 7th grade | | -.16 | | -.05 |
| 8th grade | | .02 | | -.21 |
| Gender | | .29** | | -.17 |
| Special Education Status | | -.09 | | .03 |
| Step 2 | .11 | | .28 | |
| 6th grade X Teacher Caring and Support | | .74 | | -.54 |
| 7th grade X Teacher Caring and Support | | .07 | | -.85 |
| 8th grade X Teacher Caring and Support | | | | -.05 |
| Gender X Teacher Caring and Support | | -1.26* | | .70 |
| Special Education X Teacher Caring and Support | | -.45 | | .86 |
| 6th grade X Teacher Press for Academic Thought | | -.22 | | .21 |
| 7th grade X Teacher Press for Academic Thought | | -.73 | | 1.29 |
| 8th grade X Teacher Press for Academic Thought | | -.41 | | .75 |
| Gender X Teacher Press for Academic Thought | | < .01 | | -.32 |
| Special Education X Teacher Press for Academic Thought | | 1.01 | | -1.46* |

*Note.* ** = $p < .01$; * = $p < .05$

When examining the behavioral outcome of Paycheck Dollars with a multiple regression model, gender was found to be the only significant predictor of Paycheck Dollars ($\beta = .29$, $p < .01$), with girls more likely to have higher Paycheck Dollars than boys. There was a significant interaction effect for gender and Teacher Caring and Support ($\beta = -1.26$, $p < .05$), which indicates that the effect of Teacher Caring and Support on Paycheck Dollars was dependent on gender.

For the behavioral outcome of Enrichment Detention, the multiple regression model found Teacher Press for Academic Thought to be a significant predictor of Enrichment Detention ($\beta = -.40$, $p < .01$), controlling for the other independent variables. This means that students who rated Teacher Press for Academic Thought more highly were found to have fewer instances of Enrichment Detention. There was a significant interaction effect for Special Education status and Teacher Press for Academic Thought ($\beta = -1.46$, $p < .05$), which means that the effect of students' Special Education status on their instances of Enrichment Detention depended on their ratings of Teacher Press for Academic Thought. Special Education status alone was not found to be a significant predictor of Enrichment Detention.

**Research Question 5**

How much of the variance in student academic outcomes can be predicted by student perceptions of teacher support, controlling for demographic variables?

To examine differences in the effects of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on the measured academic outcomes, controlling for the demographic variables of student grade, gender, and Special

Education status, the interaction terms created by multiplying Teacher Caring and Support and Teacher Press for Academic Thought scores by grade (dummy coded), gender, and special education status were again utilized. A multiple regression analysis was then completed, including all independent variables and demographic variables in the first block, and all of the interaction terms in the second block. The results of these regression analyses can be found in Table 8.

Table 8

*Regression Results for the Interaction Between the Independent Variables and the Demographic Variables for Academic Outcomes*

| | Academic Outcomes | | | |
|---|---|---|---|---|
| | MAP Reading | | GPA | |
| Predictor | $\Delta R^2$ | β | $\Delta R^2$ | β |
| Step 1 | .24*** | | .14* | |
| Teacher Caring and Support | | -.19 | | -.12 |
| Teacher Press for Academic Thought | | .31* | | .23 |
| 6th grade | | < -.01 | | -.05 |
| 7th grade | | .13 | | -.04 |
| 8th grade | | .36** | | -.02 |
| Gender | | .13 | | .35** |
| Special Education Status | | -.24* | | -.094 |
| Step 2 | .07 | | .10 | |
| 6th grade X Teacher Caring and Support | | .67 | | .37 |
| 7th grade X Teacher Caring and Support | | < .01 | | .02 |
| 8th grade X Teacher Caring and Support | | -.12 | | -.61 |
| Gender X Teacher Caring and Support | | -1.08 | | -.35 |

| | | |
|---|---|---|
| Special Education X Teacher Caring and Support | -.79 | -.68 |
| 6th grade X Teacher Press for Academic Thought | .04 | -.40 |
| 7th grade X Teacher Press for Academic Thought | -.10 | .85 |
| 8th grade X Teacher Press for Academic Thought | .04 | -.01 |
| Gender X Teacher Press for Academic Thought | .66 | -.75 |
| Special Education X Teacher Press for Academic Thought | .46 | .60 |

*Note.* *** = $p < .001$; ** = $p < .01$; * = $p < .05$

In the multiple regression model, Teacher Press for Academic Thought, Eighth Grade student status, and Special Education status were all found to be significant unique predictors of MAP Reading scores when controlling for the other independent variables. Teacher Press for Academic Thought was found to be a significant unique predictor of MAP Reading scores ($\beta = .31$, $p < .05$), with students who rated Teacher Press for Academic Thought more highly found to be more likely to have higher MAP Reading scores. Eighth Grade student status was found to be a significant unique predictor of MAP Reading scores ($\beta = .36$, $p < .01$). Students in eighth grade were found to be more likely to get higher MAP Reading scores, which is to be expected, since the scores are expected to increase as students get older as it is a measure of progress over time. Special Education status was also found to be a significant unique predictor of MAP Reading scores ($\beta = -.24$, $p < .01$). Students who were receiving Special Education services were found to be more likely to have lower MAP Reading scores. None of the interaction terms were found to be significant unique predictors of MAP Reading scores.

When examining the multiple regression model to predict student GPA, gender was found to be the only significant predictor of GPA ($\beta = .35$, $p < .01$), with girls being

found to be more likely to have higher GPAs than boys. None of the interaction terms were found to be significant predictors of GPA.

**Research Question 6**

To what extent does student engagement mediate the relationship between teacher support and student outcomes?

In order to function as a mediator, a variable must affect the way that an independent variable influences the dependent variable of interest (Baron & Kenny, 1986). In order to test for mediation, Baron and Kenny (1986) suggest that three conditions must be met: 1) the independent variable (*X*) must significantly predict the outcome variable (*Y*), 2) *X* must significantly predict the proposed mediator (*M)*, and 3) *M* must significantly predict *Y* when controlling for *X*. If the effect of *X* on *Y* decreases with the inclusion of *M*, then mediation is assumed (Preacher & Hayes, 2004). However, Preacher and Hayes (2004) suggest that more statistically rigorous methods can be used to test for mediation, including a procedure known as the Sobel test, developed by Sobel (1982), and described by Baron and Kenny (1986). The Sobel test examines the indirect effect of *X* on *Y* using an equation that divides the product of the path from *X* to *M* and the path from *M* to *Y* by the standard error of the indirect effect. It provides the significance of the indirect effect by testing the null hypothesis that there will be no difference between the direct effect and the indirect effect (Preacher & Hayes, 2004). Rather than the three criteria suggested by Baron and Kenny (1986), Preacher and Hayes (2004) suggest that it would be more statistically powerful to test for mediation by

examining two criteria: 1) is there is a significant effect of *X* on *Y*, and 2) is the indirect effect statistically significant in the predicted direction?

In order to test student engagement for mediation, the initial criteria recommended by Preacher and Hayes (2004) were checked, and then the Sobel test was completed using an online program which calculated the statistical significance based on the numbers entered into an interactive equation (http://www.quantpsy.org/sobel/sobel.htm). Since there were two measures of student engagement: Student-Rated Engagement and Teacher-Rated Engagement, both were examined as possible mediators.

**Student-Rated Engagement.** First, Student-Rated Engagement was examined as a possible mediator between the effect of each of the proposed independent variables (Teacher Caring and Support and Teacher Press for Academic Thought) and the measured behavioral and academic dependent variables.

***Behavioral outcomes.*** First, the effect of Teacher Caring and Support on the behavioral outcomes was examined. Although Teacher Caring and Support was found to be a significant predictor of Enrichment Detention ($R^2 = .08$, $p < .01$), when Teacher Caring and Support and Student-Rated Engagement were both used as independent variables in the regression model, and the results were entered into the Sobel test equation, Student-Rated Engagement was not found to account for a significant amount of the effect of Teacher Caring and Support on Enrichment Detention (Sobel T-Statistic = -.07, $p = .46$).

The relationship between Teacher Press for Academic Thought and Enrichment Detention was also not found to be mediated by Student-Rated Engagement. Teacher Press for Academic Thought was found to be a significant predictor of Enrichment Detention ($R^2$ = .16, $p$ < .001), but when Teacher Press for Academic Thought and Student-Rated Engagement were both used as independent variables in the regression model, and the results were entered into the Sobel test equation, Student-Rated Engagement was not found to account for a significant amount of the effect of Teacher Press for Academic Thought on Enrichment Detention (Sobel T-Statistic = -0.712, $p$-value = .48). Since neither Teacher Caring and Support nor Teacher Press for Academic Thought were found to be significant predictors of Paycheck Dollars, there was no effect for Student-Rated Engagement to mediate. The effect of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on the measured behavioral outcomes (Enrichment Detention and Paycheck Dollars) was not found to be mediated by Student-Rated Engagement.

***Academic outcomes.*** For academic outcome variables, Teacher Caring and Support was not found to be a significant predictor of either MAP Reading scores or GPA. A linear regression found that Teacher Press for Academic Thought was only a moderate predictor of MAP Reading scores ($R^2$ = .04, $p$ = .06), but was not found to be a significant predictor of GPA. When Teacher Press for Academic Thought and Student-Rated Engagement were both used as independent variables in the regression model, and the results were entered into the Sobel test equation, Student-Rated Engagement was not found to account for a significant amount of the effect of Teacher Press for Academic

Thought on MAP Reading scores (Sobel T-Statistic = -1.90, $p = .06$), although it came close to significance.

Overall, Student-Rated Engagement was not found to significantly mediate the effect of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on any of the measured student outcome variables (Paycheck Dollars, Enrichment Detention, MAP Reading scores, GPA).

**Teacher-Rated Engagement.** Next, Teacher-Rated Engagement was examined as a possible mediator between the effect of the proposed independent variables (Teacher Caring and Support and Teacher Press for Academic Thought) and the measured behavioral and academic outcome variables.

***Behavioral outcomes.*** For the behavioral outcome variable of Enrichment Detention, Teacher Caring and Support and Teacher Press for Academic Thought were both found to be significant predictors. Since Teacher Caring and Support was found to be a significant predictor of Enrichment Detention ($R^2 = .08$, $p < .01$), Teacher Caring and Support and Teacher-Rated Engagement were both used as independent variables in the regression model, and the results were entered into the Sobel test equation. Teacher-Rated Engagement was found to account for a significant amount of the variation in the effect of Teacher Caring and Support on Enrichment Detention. (Sobel T-Statistic of -2.16, $p < .05$). In other words, the relationship between Teacher Caring and Support and Enrichment Detention was mediated by Teacher-Rated Engagement. Since Teacher Press for Academic Thought was also found to be a significant predictor of Enrichment Detention ($R^2 = .16$, $p < .001$), Teacher Press for Academic Thought and Teacher-Rated

Engagement were both used as independent variables in the regression model, and the results were entered into the Sobel test equation. Teacher-Rated Engagement was found to account for a significant amount of the variation in the effect of Teacher Press for Academic Thought and Enrichment Detention (Sobel T-Statistic of -2.16, $p < .05$). In other words, the relationship between Teacher Press for Academic Thought and Enrichment Detention was mediated by Teacher-Rated Engagement.

Since neither Teacher Caring and Support nor Teacher Press for Academic Thought were found to be significant predictors of Paycheck Dollars, Teacher-Rated Engagement could not be considered a mediating variable, since there was no effect to mediate. In the case of the behavioral outcome variables, Teacher-Rated Engagement was found to mediate the effects of Teacher Caring and Support and Teacher Press for Academic Thought on Enrichment Detention. This means that the variable of Teacher-Rated Engagement was able to partially explain the relationships between the factors of Teacher Caring and Support and Teacher Press for Academic Thought and Enrichment Detention.

***Academic Outcomes.*** For the academic outcome variables, Teacher Caring and Support was not a significant predictor of MAP Reading, so Teacher-Rated Engagement could not be considered a mediating variable between Teacher Caring and Support and MAP Reading scores, since there was not a significant effect to mediate. The other independent variable, Teacher Press for Academic Thought, was found to be a marginal predictor of MAP Reading ($R^2 = .04$, $p = .057$). Therefore, Teacher Press for Academic Thought and Teacher-Rated Engagement were both used as independent variables in the

regression model, and the results were entered into the Sobel test equation. Teacher-Rated Engagement was found to account for a significant amount of the variation in the effect of Teacher Press for Academic Thought on MAP Reading (Sobel T-Statistic of 2.01, $p < .05$). In other words, the relationship between Teacher Press for Academic Thought and MAP Reading was mediated by Teacher-Rated Engagement. Since neither Teacher Caring and Support, nor Teacher Press for Academic Thought were found to be significant predictors of GPA, Teacher-Rated Engagement could not be considered a mediating variable in this case, since there was no effect to mediate. In the case of the academic outcome variables, Teacher-Rated Engagement was found to mediate the effect of Teacher Press for Academic Thought on MAP Reading scores. This means that the variable of Teacher-Rated Engagement was able to partially explain the relationship between Teacher Press for Academic Thought and student MAP Reading scores.

Overall, teacher ratings of student engagement were found to be more likely to mediate the effect of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on student outcomes than were student ratings of their own engagement.

# Chapter 5

## Discussion

Research in the area of teacher-student relationships has examined the relationship from different perspectives and different theoretical orientations. The relationship has been examined through the lens of attachment theory, motivational theory, and parenting styles. Although different definitions of the teacher-student relationship have been used, research has consistently found an association between various aspects of the relationship and positive school-related outcomes for students, such as increased engagement, higher grades, and increased positive behavior (Ang, 2005; Baker, 2006; Decker et al., 2007; Furrer & Skinner, 2003; Gregory & Weinstein, 2008; Klem & Connell, 2004; Murray & Malmgren, 2005; Roorda et. al, 2011; Shouse, 1996; Skinner & Belmont, 1993; Walker, 2008; Wentzel, 2002; Wigfield et al., 2008). When all of these elements are aggregated, themes begin to emerge pointing to the fact that in order to support students both emotionally and academically, the teacher-student relationship must include more than just affective aspects, but must also include academic press and high academic expectations for students.

The main purpose of this study was to determine the relationship between urban middle school students' perceptions of the support provided by their teachers, and student engagement, behavior, and academic success. The research study used a student self-report instrument created from existing measures that focused on the alterable aspects of the relationship between teachers and their adolescent students, including teacher support

for the needs of competence, autonomy, and relatedness, as well as teacher support for academic press and mastery goal orientation.

Students were administered the *Measure of Teacher Support and Student Engagement – Student Report* survey at the classroom level. Student perceptions of their teacher's support for the needs of competence, autonomy, and relatedness were measured using the fourteen items that comprise the Experiences of Support from Teachers Subdomain of *The Research Assessment Package for Schools* (RAPS; Institute for Research and Reform in Education, 1998), and student perceptions of their teacher's use of mastery goals in the classroom and academic press were measured using the five-item Teacher Mastery Goal and seven-item Academic Press subscales of the *Patterns for Adaptive Learning Scales* (PALS; Midgley et al., 2000). Student-reported engagement was measured using the five-item Behavioral Engagement and five-item Emotional Engagement subscales of *Engagement Versus Disaffection With Learning: Student-Report* (Skinner et al., 2008; Skinner, Kindermann, and Furrer, 2009). Teacher-reported student engagement was measured by having each teacher rate the engagement of each student in their classes based on Skinner and Pitzer's (2012) conceptualization of behavioral, emotional, and cognitive engagement, and teachers' ratings for each student were then averaged to create a Teacher-Rated Engagement score for each student.

Participating students' behavior was measured using two indicators: assignment to enrichment detention and paycheck "dollars". Student academic achievement was measured using two sources of data: grade point average (GPA), and Northwest Evaluation Association (NWEA) benchmark assessment (Measures of Academic

Progress [MAP]) reading scores. Demographic variables included student grade, gender, and special education status.

**Summary of Findings**

**Research question 1.** Previous research studies using the RAPS and the PALS (Connell & Wellborn, 1991; Gregory & Weinstein, 2008; Klem & Connell, 2004; Institute for Research and Reform in Education, 1998; Midgley et al., 2000) have not included an examination of the factor structure of the measures, so it was not clear which items would hang together. Many of the items tapped into similar concepts related to teacher support for student needs, so it was unclear how many factors would emerge. The student needs of competence, autonomy, and relatedness measured by the RAPS (Institute for Research and Reform in Education, 1998) did not necessarily include academic press as defined by Phillips (1997), Lee and Smith (1999), or Shouse (1996), or all of the aspects of mastery goal orientation described by Ames (1992).

An exploratory factor analysis of the teacher-student relationship items from the *Measure of Teacher Support and Student Engagement – Student Report* found that a six-factor model explained most of the variance in the data, but the first two factors, Teacher Caring and Support and Teacher Press for Academic Thought, explained the majority of the variance (66%) and were the only factors retained in the final model. A confirmatory analysis completed using the 17 items that were contained in the Teacher Caring and Support and Teacher Press for Academic Thought factors, found the two-factor model to be a good fit for the data. The Teacher Caring and Support factor contained items regarding student perceptions of teacher support for mastery, competence, autonomy, and

relatedness, while the Teacher Press for Academic Thought factor contained items related to student perceptions that their teachers pressed them to engage in academic thinking and challenged them academically.

The fact that Teacher Press for Academic Thought emerged as a separate factor from Teacher Caring and Support supports the idea that teacher academic press and support for students' academic thinking is different than the provision of structure (support for competence) as defined by Connell and Wellborn (1991). Connell and Wellborn's definition of structure focuses mainly on "expectations and consequences" (1991, p.54), and the current research supported the idea that students' need for competence may involve more than just "structure". Students also benefit from the academic expectations communicated by their teachers. This is supported by previous research that examined academic press separately from the affective elements of the teacher student relationship, and found that academic press was a prerequisite for the positive outcomes that could be associated with social support (Lee & Smith, 1999; Shouse, 1996). It should also be noted that the factor of Teacher Caring and Support included four items measuring teacher support for mastery goals, which is further evidence that research examining teacher support for the student needs of competence, autonomy and relatedness may have been missing important elements of teacher support.

**Research questions 2 and 3.** Research based on motivation theory has found that when teacher-student relationships were measured from students' perspectives, students who reported high levels of teacher support were more likely to feel optimally engaged, and were also more likely to be rated as optimally engaged by their teachers (Klem &

Connell, 2004). In the present study, the correlations between student ratings of Teacher Caring and Support and Teacher Press for Academic Thought and student-rated engagement were found to be moderate to strong, while the correlations between student ratings of Teacher Caring and Support and Teacher Press for Academic Thought and teacher-rated engagement were low-moderate. The fact that student-rated engagement was found to have higher correlations with facilitators of engagement than teacher-rated engagement was an expected result, since higher correlations are expected between measures that were completed by the same respondent (Skinner et al., 2009).

The correlation between student-rated engagement and teacher-rated engagement was also examined, and was found to be a significant but weak correlation, indicating that students and teachers did not entirely agree on their level of engagement. This correlation was lower than expected, as previous research had found student and teacher ratings of engagement to be moderately correlated (Skinner et al., 2009). The correlation could have been lower than expected due to the fact that the current research used different scales to measure student- and teacher- rated engagement, while previous research studies (e.g., Skinner et al., 2009) have given both teachers and students a variation of the same sets of questions regarding students' behavioral and emotional engagement.

**Research question 4**. Research has suggested that prosocial behavior can be impacted by the teacher-student relationship (Wentzel, 1997), and student reports of affective qualities of the teacher-student relationship accounted for a significant portion of the variance in behavior referrals (Decker et al., 2007). It was hypothesized that student perceptions of the teacher-student relationship would predict the behavioral

outcomes for students. However, when examining the effect of Teacher Caring and Support and Teacher Press for Academic Thought on behavioral outcomes using a multiple regression model, student perceptions were found to have a greater effect on assignment to enrichment detention than on total "paycheck dollars" awarded.

Gender was found to be the only significant predictor of paycheck dollars, with girls more likely to have higher paycheck dollars than boys. This indicates that overall, teachers were more likely to perceive that the girls in their classes were displaying more on-task, positive behaviors. There was also a significant interaction effect for gender and Teacher Caring and Support, which indicates that the effect of Teacher Caring and Support on paycheck dollars was dependent on gender. These results were not unexpected, as teachers have been found to perceive their relationships with boys as more conflictual (Baker, 2006; Birch & Ladd, 1997; Birch & Ladd, 1998; Hamre & Pianta, 2001; Murray & Murray, 2004), which could lead to teachers awarding fewer "dollars" to their male students. However, it is possible that paycheck dollars may have been too subjective of a measure, with too much room for error, since a correlation analysis found that paycheck dollars were not related to any of the student-rated variables (Teacher Caring and Support, Teacher Press for Academic Thought, or Student-Rated Engagement), as was expected, and students' total paycheck dollars could have been influenced by other factors, such as student attendance (paycheck dollars were not awarded during absences).

Teacher Press for Academic Thought was found to be a significant predictor of assignment to enrichment detention, with students who rated Teacher Press for Academic

Thought more highly to be more likely to have fewer instances of enrichment detention. There was a significant interaction effect for special education status and Teacher Press for Academic Thought, which means that the effect of students' special education status on their instances of enrichment detention depended on their ratings of Teacher Press for Academic Thought. These results indicated that the strongest predictor of students' assignment to enrichment detention was their rating of Teacher Press for Academic Thought, controlling for other variables. These results were not entirely expected. Previous research had indicated that student reports of affective qualities of the teacher-student relationship accounted for a significant portion of the variance in behavior referrals (Decker et al., 2007), but research was not found linking academic press with student behavior. Although student ratings of both Teacher Caring and Support and Teacher Press for Academic Thought were found to be correlated with assignment to enrichment detention, only Teacher Press for Academic Thought emerged as a predictor in the multiple regression analysis. Therefore, in the current study, student perceptions that their teachers pressed them to engage in academic thinking and challenged them academically were more powerful predictors of their disruptive behavior (as represented by their assignment to enrichment detention) than their perceptions of teacher support for mastery, competence, autonomy, and relatedness.

**Research question 5**. Past research indicated that when measured from the teacher perspective, the teacher-student relationship was found to be related to students' grades and test scores (Ang, 2005; Baker, 2006). When measured from the student perspective, previous research found that students' ratings of their perceptions of social

support from their teachers was moderately positively correlated with their total GPA, but only for students receiving free and reduced-price lunch (Malecki & Demaray, 2006). In addition, a meta-analysis found that effect sizes between positive teacher-student relationships and achievement were found to be larger in samples with greater ethnic diversity, as well as in samples with lower SES (Roorda et. al, 2011). In the current study, it was hypothesized that students' perceptions of Teacher Caring and Support and Teacher Press for Academic Thought would predict both MAP Reading scores and GPA.

When examining the effect of Teacher Caring and Support and Teacher Press for Academic Thought on academic outcomes using a multiple regression model, Teacher Press for Academic Thought, Eighth Grade student status, and Special Education status were all found to be significant unique predictors of MAP Reading scores, while gender was found to be the only significant predictor of GPA, with girls being found to be more likely to have higher GPAs than boys.

For MAP Reading scores, students who rated Teacher Press for Academic Thought more highly were found to be more likely to have higher MAP Reading scores. It is possible that students who rated Teacher Press for Academic Thought more highly were also students who were more academically advanced, although it is interesting that these students were not found to have significantly higher GPAs in addition to higher test scores. Perhaps this can be partially explained by the fact that student GPA is an academic outcome measure that is more dependent on teacher perceptions of student effort and mastery of material, while the MAP Reading test can be thought of as a measure of student academic ability that is not dependent on teacher perceptions.

Students in eighth grade were also found to be more likely to get higher MAP Reading scores, which is to be expected, since MAP scores are expected to increase as students get older as it is a measure of progress over time. Students who were receiving Special Education services were found to be more likely to have lower MAP Reading scores, which may also be expected, since these students may be receiving services because they are struggling academically. Importantly, the current study demonstrated that students' perceptions of the level of academic challenge and thought required in their classes uniquely predicted their reading test scores at the end of the school year.

**Research question 6**. Past research has indicated that student engagement serves as a mediator between the context of teacher-student relationships and positive student outcomes (Furrer & Skinner, 2003; Hughes et al., 2008; Wigfield et al., 2008). However, these research studies measured student engagement using teacher-report, not student report. In the current study, both student-rated engagement and teacher-rated engagement were examined as possible mediators between the effect of the proposed independent variables (Teacher Caring and Support and Teacher Press for Academic Thought) and the measured behavioral and academic dependent variables. Student-rated engagement was not found to significantly mediate the effect of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on any of the measured student outcome variables (Paycheck Dollars, Enrichment Detention, MAP Reading scores, GPA). Teacher-rated engagement, however, was found to mediate the effects of Teacher Caring and Support and Teacher Press for Academic Thought on Enrichment Detention, as well as the effect of Teacher Press for Academic Thought on MAP Reading

scores. Overall, teacher ratings of student engagement were found to be more likely to mediate the effect of the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought on student outcomes than were student ratings of their own engagement.

It is possible that student engagement was not found to serve as a mediator was because there was not enough variance. Students generally rated their engagement positively. With the exception of one outlier, most of the students rated themselves to be engaged in class (meaning that they agreed with most of the items, on average). Teacher-rated engagement on the other hand, was more normally distributed. In this way, teacher ratings of student engagement may have been more "accurate" than the students' own ratings.

**Limitations and Merits**

There were a few limitations that should be noted when interpreting the results of this study. First, the student participants in the study were members of a unique population of students, which is not readily generalizable to all middle school students. The data were collected at a unique setting: an urban charter school, with a primarily African American student body and a primarily Caucasian teaching staff. Although the sample is not necessarily generalizable, it still provides interesting information about ways in which teachers can support students' academic and behavioral success. In addition, the unique sample proved an opportunity to research a fairly homogenous group of students, and how they responded to the context of a specific school setting. Future research could expand this research to other settings and other student populations, using

the two-factor model of Teacher Caring and Support and Teacher Press for Academic Thought in order to determine if results vary based on the student sample.

A second limitation of the current study is the fact that although the student survey was offered to all of the students attending the school, only 75% of the students participated in the survey. Of the students who did not participate, a number were absent from class on the day of the survey, and the rest of the students either refused to give their assent, or turned in a signed form from their parents requesting that they not participate in the research study. It is possible that there were systematic differences about the students who did not participate due to absences or opting out that may have changed the results of the data analysis had they been included.

Finally, it is possible that the results regarding student- and teacher-rated engagement may have been influenced by the methods of measuring engagement that were used. Since teachers and students rated student engagement using different scales, it was difficult to compare their ratings and determine if they were similar. Students generally rated engagement positively, as did their teachers, but there was much more variation in teacher's ratings of student engagement. While students were asked to respond to ten items regarding their behavioral and emotional engagement, teachers were only asked to rate student engagement on a scale of 1-10 in an effort to gather teacher input while being respectful of their time and the fact that each teacher had to rate the engagement of multiple classes of students. However, as a result of an effort to make teacher participation more likely, teacher and student ratings were difficult to compare.

Despite the aforementioned limitations, the current study contributed to the research on teacher-student relationships through the development of a student survey that measures teacher-student relationships from a motivational perspective, and includes both affective and academic support elements. The study provided important evidence that academic press (identified in this study as Teacher Press for Academic Thought) is a separate and important element of teacher-student relationships that has a unique contribution to students' academic and behavioral success at school, and that measures of teacher support should include support for mastery goals in addition to support for competence, autonomy, and relatedness. Although Teacher Press for Academic Thought emerged as a unique predictor of students' assignment to enrichment detention and students' reading test scores, both Teacher Caring and Support and Teacher Press for Academic Thought were found to be significantly correlated with student- and teacher-ratings of student engagement. This indicates that teacher academic press and support for students' academic thinking predicted academic and behavioral outcomes and was associated with students' level of engagement, while teacher support for students' competence, autonomy, relatedness, and mastery goals (identified in this study as Teacher Caring and Support) was related to students' engagement, but was not able to uniquely explain the relationship between teacher context and student outcomes. Since the factors of Teacher Caring and Support and Teacher Press for Academic Thought were found to be positively and strongly correlated, there is evidence that these two elements of teacher-student relationships are both important factors in student engagement as well as student academic and behavioral success at school.

**Implications**

This research may be extended in the future by performing more detailed analyses of possible moderator and mediator variables and the role that they may play in influencing the relationship between teacher-student relationships and student outcomes of interest. There is evidence that student characteristics, such as gender, ethnicity, SES, and special education status may moderate the associations between teacher-student relationships and engagement and achievement (Roorda et. al, 2011). The current research found gender to be a significant predictor of paycheck dollars (an indicator of on-task behaviors), as well as GPA (an indicator of academic achievement). It may be possible that gender serves as a moderator variable, with the effects of Teacher Caring and Support and Teacher Press for Academic Thought varying by gender.

Future research may also include a different type of mediation analysis, in which data are examined for indirect effects between variables, even when there is no direct effect observed (Hayes, 2009). Although it was not found to be a mediator variable, it is possible that student-rated engagement may have had an indirect effect on the relationship between the independent variables of Teacher Caring and Support and Teacher Press for Academic Thought and student academic and behavioral outcomes which would be valuable to quantify.

There is also evidence that some students benefit more from academic press than from perceived caring, while for other students, the reverse may be true (Dever & Karabenick, 2011; Shouse, 1996). This could be related to what type of parenting style students are used to experiencing at home, as well as how caring is defined. The current

research included a primarily African American sample of students from an urban area, for whom Teacher Press for Academic Thought was found to be more predictive of academic and behavioral outcomes than Teacher Caring and Support. That finding may be unique to this specific sample. Future research examining the two-factor model of Teacher Caring and Support and Teacher Press for Academic Thought with other student populations may find that the proportion of variance uniquely explained by these two factors may vary based on the student sample.

In addition, it may be interesting for future research to examine the effect of the school setting on students' ratings of Teacher Caring and Support and Teacher Press for Academic Thought. The data for current study were collected at an urban charter school, with a focus on closing the achievement gap and teaching students the academic skills and character traits necessary to be successful in college. The school's strict behavior policies and rigorous academic pace may have been less supportive of students' needs for competence and autonomy than what may be found at other school settings, yet may have had more focus on academic press.

Finally, this research suggested that teachers' perceptions of student engagement may be more predictive of student outcomes than students' own perceptions. Future research could further examine this potential disconnect between student- and teacher-ratings of student engagement. Examining ratings of behavioral engagement separately from ratings of emotional engagement could help to identify which element of student engagement is most predictive of positive student outcomes.

## Conclusion

The results of the current study, which focused on the perspectives of students at an urban middle school, revealed that when examining the relevant aspects of the teacher-student relationship, studies that only measure the affective aspects of the relationship are missing a key element, namely academic expectations and rigor. The current study highlighted the importance of academic press (in the form of Teacher Press for Academic Thought), which emerged as a separate factor from Teacher Caring and Support. Teacher academic press and support for students' academic thinking (Teacher Press for Academic Thought) predicted academic and behavioral outcomes and was associated with students' level of engagement, while teacher support for students' competence, autonomy, relatedness, and mastery goals (Teacher Caring and Support) was found to be related to students' engagement, but was not able to uniquely explain the relationship between teacher context and student outcomes. The current research provided evidence that both of these elements of teacher-student relationships are important factors in student engagement as well as student academic and behavioral success at school. Although further research is needed in order to identify possible moderator and mediator variables, as well as how these results may differ based on student population and setting, there is some evidence to suggest that teachers may be able to have a positive effect on student behavior and achievement by encouraging their students to think critically and providing high academic expectations and challenging academic work along with support to help students master the academic material.

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# Appendix A

## Measure of Teacher Support and Student Engagement – Student Report

Date_____

This survey will give us important information about what kind of support you receive from your teachers, and how you feel and act in class. Your answers are confidential, and will not be shared with your teachers.

***PLEASE CIRCLE THE NUMBER THAT BEST DESCRIBES WHAT YOU THINK.***

| ***A. Teacher Support for Effort and Learning*** | **Not at all True** | **Not Very True** | **Sort of True** | **Very True** |
|---|---|---|---|---|
| 1. My teacher thinks mistakes are okay as long as we are learning. | 1 | 2 | 3 | 4 |
| 2. My teacher wants us to understand our work, not just memorize it. | 1 | 2 | 3 | 4 |
| 3. My teacher wants us to enjoy learning new things. | 1 | 2 | 3 | 4 |
| 4. My teacher recognizes us for trying hard. | 1 | 2 | 3 | 4 |
| 5. My teacher gives us time to really explore and understand new ideas. | 1 | 2 | 3 | 4 |
| 6. When I've figured out how to do a problem, my teacher gives me more challenging problems to think about. | 1 | 2 | 3 | 4 |
| 7. My teacher presses me to do thoughtful work. | 1 | 2 | 3 | 4 |
| 8. My teacher asks me to explain how I get my answers. | 1 | 2 | 3 | 4 |
| 9. When I'm working out a problem, my teacher tells me to keep thinking until I really understand. | 1 | 2 | 3 | 4 |
| 10. My teacher doesn't let me do just easy work, but makes me think. | 1 | 2 | 3 | 4 |
| 11. My teacher makes sure that the work I do really makes me think. | 1 | 2 | 3 | 4 |
| 12. My teacher accepts nothing less than my full effort. | 1 | 2 | 3 | 4 |

| ***B. Teacher Attention, Caring, Expectations, and Control*** | | | | |
|---|---|---|---|---|
| 13. My teacher doesn't seem to have enough time for me. | 1 | 2 | 3 | 4 |
| 14. My teacher cares about how I do in school. | 1 | 2 | 3 | 4 |
| 15. The rules in my classrooms are clear. | 1 | 2 | 3 | 4 |
| 16. My teacher interrupts me when I have something to say. | 1 | 2 | 3 | 4 |
| 17. My teacher is fair with me. | 1 | 2 | 3 | 4 |
| 18. My teacher thinks what I say is important. | 1 | 2 | 3 | 4 |
| 19. My teacher doesn't make clear what he/she expects of me in school. | 1 | 2 | 3 | 4 |
| 20. My teacher has plenty of time for me. | 1 | 2 | 3 | 4 |
| 21. My teacher isn't fair with me. | 1 | 2 | 3 | 4 |
| 22. My teacher tries to control everything I do. | 1 | 2 | 3 | 4 |
| 23. My teacher doesn't explain why we have to learn certain things in school. | 1 | 2 | 3 | 4 |
| 24. My teacher likes to be with me. | 1 | 2 | 3 | 4 |
| 25. My teacher's expectations for me are way off base. | 1 | 2 | 3 | 4 |
| 26. My teacher likes the other kids in my class better than me. | 1 | 2 | 3 | 4 |

## Measure of Teacher Support and Student Engagement – Student Report

| *C. Student Behavior and Feelings in Class* | Not at all True | Not Very True | Sort of True | Very True |
|---|---|---|---|---|
| 1. I try hard to do well in school. | 1 | 2 | 3 | 4 |
| 2. In class, I work as hard as I can. | 1 | 2 | 3 | 4 |
| 3. When I'm in class, I participate in class discussions. | 1 | 2 | 3 | 4 |
| 4. I pay attention in class. | 1 | 2 | 3 | 4 |
| 5. When I'm in class, I listen very carefully. | 1 | 2 | 3 | 4 |
| 6. When I'm in class, I feel good. | 1 | 2 | 3 | 4 |
| 7. When we work on something in class, I feel interested. | 1 | 2 | 3 | 4 |
| 8. Class is fun. | 1 | 2 | 3 | 4 |
| 9. I enjoy learning new things in class. | 1 | 2 | 3 | 4 |
| 10. When we work on something in class, I get involved. | 1 | 2 | 3 | 4 |

**Thank you very much for your input!**

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# Appendix B

**Teacher Ratings of Student Engagement: Directions**

On a scale of 1-10, where 1 = 10% of the time, 5 = 50% of the time, and 10 = 100% of the time, what percent of the time would you consider each of your students to be engaged in class?

**Please use the following definition of student engagement:** The student works as hard as he/she can in class (*effort*), appears to be actively involved in the lesson (*attention/focus/participation*), and seems to be enthusiastic about learning (*enthusiasm/enjoyment*).

| Student | Student Engagement (percent of class time) |
|---|---|
| 1. | 1 2 3 4 5 6 7 8 9 10 |
| 2. | 1 2 3 4 5 6 7 8 9 10 |
| 3. | 1 2 3 4 5 6 7 8 9 10 |
| 4. | 1 2 3 4 5 6 7 8 9 10 |
| 5. | 1 2 3 4 5 6 7 8 9 10 |
| 6. | 1 2 3 4 5 6 7 8 9 10 |
| 7. | 1 2 3 4 5 6 7 8 9 10 |
| 8. | 1 2 3 4 5 6 7 8 9 10 |
| 9. | 1 2 3 4 5 6 7 8 9 10 |
| 10. | 1 2 3 4 5 6 7 8 9 10 |
| 11. | 1 2 3 4 5 6 7 8 9 10 |
| 12. | 1 2 3 4 5 6 7 8 9 10 |
| 13. | 1 2 3 4 5 6 7 8 9 10 |
| 14. | 1 2 3 4 5 6 7 8 9 10 |
| 15. | 1 2 3 4 5 6 7 8 9 10 |
| 16. | 1 2 3 4 5 6 7 8 9 10 |
| 17. | 1 2 3 4 5 6 7 8 9 10 |
| 18. | 1 2 3 4 5 6 7 8 9 10 |
| 19. | 1 2 3 4 5 6 7 8 9 10 |
| 20. | 1 2 3 4 5 6 7 8 9 10 |
| 21. | 1 2 3 4 5 6 7 8 9 10 |
| 22. | 1 2 3 4 5 6 7 8 9 10 |
| 23. | 1 2 3 4 5 6 7 8 9 10 |
| 24. | 1 2 3 4 5 6 7 8 9 10 |
| 25. | 1 2 3 4 5 6 7 8 9 10 |
| 26. | 1 2 3 4 5 6 7 8 9 10 |
| 27. | 1 2 3 4 5 6 7 8 9 10 |
| 28. | 1 2 3 4 5 6 7 8 9 10 |
| 29. | 1 2 3 4 5 6 7 8 9 10 |
| 30. | 1 2 3 4 5 6 7 8 9 10 |
| 31. | 1 2 3 4 5 6 7 8 9 10 |
| 32. | 1 2 3 4 5 6 7 8 9 10 |
| 33. | 1 2 3 4 5 6 7 8 9 10 |
| 34. | 1 2 3 4 5 6 7 8 9 10 |
| 35. | 1 2 3 4 5 6 7 8 9 10 |
| 36. | 1 2 3 4 5 6 7 8 9 10 |
| 37. | 1 2 3 4 5 6 7 8 9 10 |
| 38. | 1 2 3 4 5 6 7 8 9 10 |
| 39. | 1 2 3 4 5 6 7 8 9 10 |
| 40. | 1 2 3 4 5 6 7 8 9 10 |
| 41. | 1 2 3 4 5 6 7 8 9 10 |
| 42. | 1 2 3 4 5 6 7 8 9 10 |
| 43. | 1 2 3 4 5 6 7 8 9 10 |
| 44. | 1 2 3 4 5 6 7 8 9 10 |
| 45. | 1 2 3 4 5 6 7 8 9 10 |
| 46. | 1 2 3 4 5 6 7 8 9 10 |
| 47. | 1 2 3 4 5 6 7 8 9 10 |
| 48. | 1 2 3 4 5 6 7 8 9 10 |
| 49. | 1 2 3 4 5 6 7 8 9 10 |
| 50. | 1 2 3 4 5 6 7 8 9 10 |